THE UNIVERSE A VAST ELECTRIC ORGANISM

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GEORGE W. WARDER

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The Universe a Vast Electric Organism

BY

GEORGE WOODWARD WARDER

AUTHOR OF

"Invisible Light, or the Electric Theory of Creation," "The Cities of the Sun," Etc., Etc.

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The universe is a vast electric machine or organism creating its own cosmic force, lighting and heating itself from its own latent electric fires, and bound together by invisible electric bands pulling and guiding with the swiftness of lightning, and the power and wisdom of Omnipotence.—From "THE CITIES OF THE SUN."

G. W. DILLINGHAM COMPANY

Publishers New York

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Issued February, 1904

The Universe
a Vast
Electric Organism

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PREFACE

THIS volume is intended to further elucidate my theories of electrical creation, to cover some points lightly touched upon in my previous books; also to bring forward to date the most recent scientific facts and discoveries tending to show that the universe is a vast electric machine or organism.

This is the electrical age of the world, the age of magnetic marvels and electrical wonders. The people of this generation have witnessed the most astounding development of electrical machinery, appliances and utilities. In every department of effort human genius has called forth this invisible, mysterious magician, electricity, to work the miracles of Omnipotence.

And so rapid and marvelous have been the discoveries that the human mind stands paralyzed with wonder and amazement and asks, What next? In discovering electricity man has discovered the working force of Deity, the right hand of Omnipotence, the word of creative power, and uses it in all fields of human effort. With electric cables, electric motors, telephones, phonographs, telectroscopes, wireless telegraphy and mental telepathy, the world is revolutionized, "the old heavens and the old earth have passed away, and behold! all things are new."

The new heavens and the new earth as I see it

through scientific facts and analogies is a perfect electrical machine, a vast electro-magnetic organism of marvelous power and perfection. This "stupendous mass of matter and force" we call the universe is a complete whole, a perfect unity, creating its own light, heat and life and bound together by invisible electric ties of measureless power, as swift as lightning and as strong as Omnipotence.

Then I took up the study of electricity as a matter of curiosity and mental stimulus for my leisure hours from the law practice and realty investments. I had an indefinite idea that this mysterious force and the laws governing it might help to solve the riddle of the universe. I studied its application to ordinary machinery and then applied it to the universe as a vast machine. And behold! the universe as a mighty electric machine or organism answered every scientific question and solved every puzzle in the material world as far as I could comprehend them.

I applied it to suns and planets, man and all animal and vegetable organisms, and as electric creations and electric generators they explained a thousand mysteries. I found man the most perfect electric organism, woven by electric energy from invisible atoms, receiving his physical life, growth and nutrition, and digesting and assimilating his food by an electric process, such as Prof. Loeb and Dr. Matthews discovered in 1902, nearly twenty years after. I soon formulated a theory of electrical creation, which has recently been accepted by some of the ablest scientists.

These things I discussed openly and on the platform for many years and then I published them in

my book, The New Cosmogony, in 1898, in Invisible Light in 1900 and in The Cities of the Sun in 1901.

My attention was first called to this subject about twenty years ago when Prof. Henry built the first electric street railway ever built in this country. It was built on East Fifth Street, in Kansas City, Missouri, the city where I was living, and attracted much attention. It was used for only a short time because the machinery was not sufficiently perfected, and there was too great a waste of power, and the insulation was bad, for it magnetized and stopped the watches in the pockets of the passengers. While pondering over this electric railway and its mysterious force, as I sat in the twilight in the parlor of the old Coates House, a servant came in to light the gas. Instead of using a match, he turned on the gas, took a few gliding steps over the carpet and lit the gas by a flash of electricity from his finger, produced by touching his finger against the tip of the gas jet. I was surprised and said, "Have you enough fire in your body to light the gas?" He answered, "Yes, sir." I said, "Can you do that again?" "Yes, sir," and he turned on another jet took a few gliding steps over the carpet, touched the tip of the jet with his finger; there was a flash and the gas was lit.

I was amazed, for this was a new electric manifestation to me. He said, "You can do it, sir." "Well, I'll see if I can," and I took a few gliding steps over the carpet. He turned on the gas, I touched the jet with the tip of my finger and a flash of electric fire, an inch long, lit the gas. This I did many times afterwards and saw a dozen others do the same thing. In fact the servants seldom used

matches in that parlor, the carpet held such a surplus of electricity most any person could by a few gliding steps increase the electricity of their body so they could light the gas by a touch.

Then I began to think—electric fire in man's body, in the clouds, in coal and wood, on the telegraph line, in flint, in cold steel—in everything. Electricity must be light, heat, life and creative force, and will explain the mysteries of nature.

In the hot, dry summer of 1901, when The Cities of the Sun* was issued, my publisher called me to one side and said that his salesman was going out West. He asked, "If he offers to sell your book, which says the sun is not hot, to those old Kansas farmers, won't they mob him and hang him to the first available tree?" I admitted it did look serious on account of the extreme heat then afflicting the West, but told him to have his salesman inform them that if they would go up in a balloon a few thousand feet nearer the sun they would freeze to death, and that if they had an arm that would reach four thousand feet up into the atmosphere it would freeze to the elbow in less than thirty minutes, the hottest day ever known, as every two thousand feet upwards from the earth there is a loss of over one hundred degrees of heat. I mention this to show how some of these theories may shock the sensibilities of some unscientific thinkers.

All scientists declare that the sun is a burning globe and also the material and electric center of the solar system; but I conceived it to be a living world like our earth, only more prolific in life

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*Published by G. W. Dillingham Company, N. Y.

and power, and the intellectual and spiritual center of our system of worlds. I believe I present the only reasonable scientific hypothesis ever presented in the history of the human race which shows and explains the unity, oneness and perfect organism of the universe. It shows that the universe is self-sustaining, harmonious and eternal, creating its own cosmic light, heat and life in the magnetic atmosphere of its suns and planets, and so simple that the law of atoms is the law of suns and worlds.

With the able assistance of the many scientists, electricians and specialists who have recently accepted and championed these theories, and the progress already made, they bid fair to soon revolutionize scientific thought.

The time will come, and is not far distant, when those who believe the sun is hot, or a burning globe of fire, will be regarded as the devotees of an antiquated superstition. The enlightened world will look upon them as they do now on those who believe in witches, human slavery and that the earth is flat; and will pity their ignorance, as we do those who worshipped the gods of Olympus.

LIBRARY OF THE UNIVER-

CHAPTER I

THE UNIVERSE IS A VAST ELECTRIC ORGANISM

ELECTRICITY, next to Deity, is the most remarkable entity in the universe. Its marvelous and varied powers and utilities create a new epoch in scientific thought and discovery. Its study is replete with new and fascinating ideas and scientific theories. It contains the story of the universe more sublime than an epic, more wonderful than a romance. It organized the machinery of the worlds, and holds the secrets of nature and the mysteries of life in its invisible grasp.

Electricity is the right hand of Deity, the tongue of the Spirit, the Word of Omnipotent power, the protean cosmic force and creative machinery of the universe. At the divine fiat it seized all atoms and space, it shook the ether into nebula, the nebula into worlds, the worlds into constellations, the constellations into a universe. It shaped planets and rounded suns and hurled them forth to circle in the chorus of the singing spheres. It gave form and functions to all matter from the rounded pebble to the stars; from the raindrop to the surging seas; from the chirping cricket to the sporting leviathan; from the helpless infant to the giant man.

It is the messenger and executive of Creative Will to all created things. It is the ambassador of spirit

to matter, the autocrat of communication between all the faculties of mind and all the functions of physical existence. It is the law of affinity in matter, of selection in atoms, and whispers to the body the intuitions of the Spirit and guides insensate worlds to do the will of Creative Omnipotence.

Electricity is the wonderful medium and agent by which mind acts upon matter and works the miracle of life and growth. This mightiest servant of God and man, this genii greater than Aladdin's lamp, impresses all laws upon nature, and makes the universe obedient to the will of Deity, as man's body is obedient to the dictates of man's mind. This inscrutable word of power from the source of all power is beginning to supply the human race with an inexhaustible force that will revolutionize the earth and link all nations together as one family in a millennium of peace and good will.

Human life seems to throb, pulsate, gleam and glow in this marvelous current of existence, which causes illumination, transportation, telegraphy, photography, surgery, horticulture, agriculture, metallurgy and manufacture to step forth as master magicians to work miracles for the comfort and happiness of mankind. Every new discovery, every step in the progress of electrical science conquers time, destroys distances, diffuses knowledge, dissipates ignorance, encourages friendship and draws men and nations closer and closer by physical ties and spiritual affinities. Where once noisy ponderous mechanism pounded the rocks to release the metals, electrical science with her unseen but resistless currents instantly separate the ore and the dross. Where the soot-begrimed engineer seizes the heavy iron

throttle, she cleanly and softly touches a tiny button and the miracle is wrought—the heavy steed of steel receives its life not from smoking, hissing, fussing steam, but from an energy as silent as light and as potent as Omnipotence.

This invisible electrical energy, without brush or color, paints the gorgeous beauties of the rainbow, and photographs in every ray of light and on every human eye the moving panorama of every passing scene. It telegraphs between mind and matter, between soul and body, between suns and planets, and gives life and energy to all the varied functions of this electric magnetic universe. This strange, miraculous power has taken its place as the supreme force of all forces, the ultimate elemental force from which all other physical forces are derived, and, without fuel or expense, flies with its burdens swifter than the flight of eagles.

It is the last and greatest progeny of man genius and discovery, the seventh daughter of science, who dips her wand in the impossible and miraculous until miracles become prolific and common. Its power and expression are universal and its character and process superlatively grand. Its theatre of action is the universe and it comes to earth as the voice of Deity and the word of His Omnipotence.

This science of the impossible, this daughter of miracles, is destined to outstrip all past achievements. The ponderous and noisy mechanisms will pass away, the barren rocks will change into most precious things, the sunlight will be converted into reservoirs of power, and every raindrop and waterfall, ocean tide and wind current, will reveal exhaustless sources of wealth and energy. Then will the

ancient curse, "by the sweat of thy brow shalt thou eat bread," be removed, and agriculture and commerce will be conducted without the drudgery of toil or the weariness of labor, and the earth shall blossom at the touch of the silent electric forces which man will harness to his car of progress and power. Manufacture will then be automatic and the web she will weave in her silent loom will not be wet with the tears of imprisoned childhood, or the agonizing sweat of dungeoned manhood.

Omnipotence follows her footsteps and with the blessings of heaven she comes as a friend to relieve pain and toil and elevate and glorify humanity. Her power is as boundless as space and as universal as heaven's love.

For she comes with the Omnipotent power of Deity to relieve the burdens of toil, lift up the oppressed of the earth, and give man leisure for mental improvement and social elevation.

Electricity, I contend, is the invisible force which evolves form and substance and all visible things. Matter is but the outer garment of these invisible electric forces. It is Spirit which creates psychic life, and makes life the cause instead of the consequence of organism. It is electricity which evolved the physical universe and makes it a vast electric organism bound together by invisible electric ties, where its invisible forces are the cause instead of the consequence of physical organism. These are the basic differences between the materialistic science of the past and the psycho-electric science of the present. In the past science investigated only visible material effects and ignored the supreme invisible forces and laws which evolved and produced them.

This is an age of dominant mind, the development of a cycle of invisible forces. The past century was the age of matter. It is said Darwin, Tyndall, Haeckel and Huxley did a work which had to be done. But their work was limited to chemical and biological demonstration. It was science, but science of the old school. The discoveries since made in the domain of electricity and mental transmission make their discoveries seem trivial in comparison.

Francis Grierson says: "The discoveries and inventions of the past ten years have made child's play of every previously known system of philosphy. The simple but amazing facts disclosed during the past five years render the dreams, speculations and guesswork of the past absurd. The little we know in a practical way is more than all the philosophers of the past knew, from Aristotle to Liebnitz."

I contend that the universe is a vast electric organism. That all light, heat, and vital force is generated by electric energy in the dense magnetic atmosphere of suns and planets, where alone it is needed for animal and vegetable life, and in volcanic pockets or circuits in the outer crust of these bodies caused by electric repulsion. That the universe began in extreme cold, not heat, that the suns are not hot, but are self-luminous, perfected worlds, and like our earth, except greater and more prolific in life and power. I also contend it is as reasonable to bury an iron ship in the icebergs of the Arctic seas and expect it to become "red hot," as to expect the sun, planets or any body traveling through space 460 degrees colder than those icebergs to become "hot, red hot or molten," as the astronomers say the sun is. All light, heat, vital

force and physical life is created by contact of opposite electrical polarities in the magnetic cushion surrounding all suns and planets.

The sun furnishes the positive electricity and the planet or satellite the negative, and from these two spring all the cosmic and material forces of the universe. The electric currents of the sun create induced magnetic currents on the earth, which evolves all visible substance and life forms.

The earth at its center is a magnet of crystalline rock and varied metals, placed layer upon layer as a thermopile or voltaic battery, which constitutes the solid core of the earth magnet, and draws and holds all matter and substance atoms and atmosphere close to its magnetic heart, so that nothing can be thrown off of its vast surface, though it shoots through space fifty times faster than a bullet from a rifle and whirls round with the speed of a revolving cylinder of a dynamo. Its swift duplicate motion makes it a working battery or arc dynamo of marvelous power. It draws all things to its magnetic center as the magnetic core of a steel magnet draws filings of iron and other metals to its magnetic surface, and they cluster there in the same spherical form.

This earth magnet drew countless meteors, swarms of nebulæ and invisible matter from surrounding space, and grew in size and magnetic power as a steel magnet may grow by adding other countless magnets with their increasing power and growing accretions. For my theory is that every atom is a tiny magnet, and every molecule, meteor and visible form of matter is a combination and aggregation of magnets.

Aside from the theory of magnets, this is not far from Lockyer and Proctor's theory of the stellar formation. Norman Lockyer says: "The stellar constitution may be explained by supposing it to arise from cool meteoric swarms represented by the nebulæ and the rise of temperature due to contraction toward a centre." And he adds: "In the stars we have celestial furnaces the heat of which transcends that of our most powerful electric sparks." In this heat theory I think he is radically wrong. The rise of temperature on the sun and earth, I contend, is not from contraction, which is both insufficient and too irregular to be considered. But it did arise from the growth in power and size of the earth as a great magnet, so that as a great arc dynamo it began to throb with electric energy, and, by drawing to itself powerful currents from space and from the sun, the central electric heart of its organism, it began to generate heat and light in its own environment, which in time became translucent to the sun's rays, and, instead of the sun and earth losing their light and heating power, they are steadily increasing them.

It is thus apparent that all light, heat, physical organisms and vegetable and animal life are evolved and exist only in the magnetic atmosphere of suns and planets.

The light we see does not come from the sun or stars; it is generated in our own atmosphere. No man ever saw the sun or stars; they see the rays of light which photograph them in our atmosphere. They see pictures of them at the end of the ray emanating from them, but some of these rays have been two hundred years in reaching us.

It takes light over four years to reach us from the star nearest our earth, so it is plain we do not see these stars.

As to the heat of the sun, there has been a vast difference of opinion among scientists. Newton held it to be 1,669,300 degrees hot; Erickson, 2,726,000 degrees hot; Sacchi, 2,000,000 to 6,000,000 degrees; Waterson, 9,000,000 to 10,000,000, and Soret, 5,800,000 degrees hot. But since the discovery of the law of the conservation of energy, which is only about a hundred years old, the scientists have been hedging and crawfishing with wonderful dexterity and reducing it, until now 18,000 to 20,000 degrees are accepted as possibly correct.

As Newton was a great mathematician and the scientists accept him on other scientific questions, they ought to accept him on the sun's heat, and acknowledge a fact that ought to be apparent to all—that if heat comes to the earth from the sun, in a column 93,000,000 miles long and 8,000 miles in diameter through frigid ether 460 degrees colder than ice, the sun must be millions of degrees hot. Then, as nothing in the known universe can exist a million or even twenty thousand degrees hot, they should admit the sun is not hot, and no heat comes from the sun to the earth. Only electric currents come from the sun, which generate heat and light in our own atmosphere.

Then arises another question. All bodies lose their magnetic power when heated to less than one thousand degrees hot. Professor Fleming in his book, "Magnets and Electric Currents" says: "Magnetic bodies become changed into feeble magnetic ones by heating to a certain temperature. Iron at

its critical temperature, 690 degrees to 870 degrees or a light red heat, loses all its strong magnetic qualities. In the same way nickel loses them at 300 degrees." Thus we have the sun at even 1,000 degrees hot deprived of its magnetic power and unable to control the solar system. Prof. T. C. Mendenhal, in a recent article in Harper's Magazine, says: "The electrical resistance of pure metals diminishes at a rate which indicates that at absolute zero it would vanish and these metals would become perfect conductors of electricity." Thus cold increases and heat diminishes the electric energy of metals and all substances.

In my previous book, The Cities of the Sun, I have given over fifty reasons why the sun is not hot. Among them I may mention, first, because of the extreme cold that prevails in the upper atmosphere of the earth, through which the sun's rays must pass, but whose temperature they cannot alter. Second, because the sun's rays must traverse 93,000,000 miles of space between sun and earth, which is 460 degrees colder than ice, which would make it impossible *for them to retain any degree of heat whatever.* If heat comes from the sun it must come in a column 93,000,000 miles long, 865,000 miles in diameter, converging to 8,000 miles at the earth's surface, which would destroy the sun or any known body in the universe to furnish such heat. Third, because the perpetual snow upon the mountains even in the tropics show the sun's rays bring no heat to the earth, or the snow would be melted by the first and greatest volume of heat from the sun. Fourth, because if heat came from the sun there could be no clouds in our atmosphere, for the heat

of the sun would strike them first, and greater heat above the cloud level would prevent their formation and forever banish them from our skies.

Fifth, because heat by the law of its nature is diffusive, and cannot be shot from one sun or planet to another, or forced through space like a leaden ball or other substance, but is soon dissipated in the cold ether of space. Sixth, the sun is not hot because comets have passed three hundred thousand miles through the sun's corona without visible change or injury, which would be impossible if the sun is excessively hot, for the comet, coming from outer space, must be intensely cold, and excessive heat in the sun would explode and destroy it. This argument alone should destroy the hoary headed superstition that the sun is hot. Seventh, heat does not come from the sun, because there is no such thing as heat. Heat is simply a sensation; it is not a substance or an entity. It is a sensation caused by the increased activity of the molecules of which a body is composed, and, is produced by electric currents. I hold the sun is not a thermal or heating engine, as the astronomers claim, but an electric generator which is not hot and does not need to be hot. I repudiate the law of gravity and adopt electricity as the evolving force of the universe.

As the sun is 745 times larger than all the planets of the solar system combined, and controls the life and energy of the solar system by all laws of analogy and distribution in the universe, it should be more highly endowed with all the elements of growth, living forms and intellectual organisms than all the planets combined. Therefore, the sun should be

the spiritual and intellectual center as well as the physical and electric center of our system of worlds, the headquarters of Deity and the future abode of man. No life could come from a hot or burning sun or world, yet all animal and vegetable life comes from the all life-giving energy of the sun. Heat is not life-giving, it is not even a substance or a force. Heat does not exist except as a sensation created by the increased activity of the molecules of which the body is composed. This increased activity is caused by currents or waves of electricity passing through a body or substance. Cold is the absence of heat or lack of motion of the molecules of a body or substance, and, like heat, is not a reality, a substance or a thing, but only a sensation.

Heat and cold are produced by electricity, and are sensations resulting from electrical conditions. Heat is not a creator; electricity is the creator and heat is its servant, and only one of its thousand-fold expressions. Electricity creates the activity of the molecules which gives the sensation of heat. A person standing in the sun on a hot day receives currents of electricity which were not hot when they left the sun, but only became so when they came in contact with the earth's opposite electricity near the earth's surface. These currents produce the sensation of heat. The sun is not a burning globe, or blazing world of fire; it is an enormous magnet of measureless power, thirteen hundred thousand times larger than the earth magnet on which we live. It revolves on its enormous axis at the rate of four thousand miles an hour and is thus constituted a working magnet or arc dynamo, drawing electric energy from its vast electric field, embracing

the solar system, six billions of miles in diameter. Of this electricity, it uses for its own light, heat, and vital force what it needs, and the balance is thrown off to its luminous corona or photosphere, where it is shot by the law of electric repulsion in the sun and electric attraction in the planets to the earth and plants. The brilliancy of the sun is caused by its surplus electricity creating a luminous aurora which extends from its poles to its equator.

Newton discovered an imaginary force. Newton had an imagination which the scientific plodders who came after him lacked. They have dug in the dirt, while he sailed through azure seas and linked suns and worlds together by the mere sweep of the imagination, without any explanation or conceivable cause, and called it gravity. He might just as well have called it weight or ponderosity, which means the same as gravity. And the scientists followed him and accepted his theory of gravity, which means nothing and explains nothing. It was the best they could do, as he had an imagination and an idea and they had none. Thus the blind led the blind for two centuries, until electricity and its invisible forces were discovered, and a new field for thought and causation was opened up.

Let us suppose that space and the invisible atoms or star dust which permeate it are seized by electric energy, creating a boundless sea of invisible electromagnetism, which began to vibrate to the law of action and reaction, attraction and repulsion. Under this law every atom became a tiny magnet, and electric centers are formed which are the foundation stones and nuclei of growing suns and worlds; and invisible atoms, nebulæ and finally

meteors are drawn by electric energy and woven by magnetic force or induced electric currents into orderly layers of crystalline rock and varied metals, forming a vast thermopile, galvanic battery, working magnet, and electric dynamo all combined. By the law of electric attraction all matter would tend toward a common center, and in that common center would be found the vast central magnet-sun, sphere and dynamo many times larger and more powerful than all the others combined. As each grew in size their electric potentiality would be increased, their electric and magnetic attractions multiplied, and their revolution upon their axis and their orbit motion would be accelerated to a marvelous extent, giving them measureless force and power.

Herbert Spencer affirms that space is eternal and has always existed. We will suppose the same of matter in its elemental form, known as the atom, and we will venture also to assert that force is a substance like matter, but a thousand times more refined and invisible than the atom, and we will call it the electric ion, or electron.

Thus we have three indestructible, invisible entities—space, matter and force—which have existed eternally and which constitute the basic foundation and fallow ground of primeval chaos, which was the beginning of the universe. Then stars and planets, suns and worlds were transparent ether, as impalpable as the viewless air, and scattered as star-dust in the measureless void of space along the forgotten highways of the eternities. Silence reigned profound in the pulseless regions of the air where, motionless and dumb, the atoms hung in dark

and lifeless space. There was nothing in all that seemingly chaotic universe; nothing but cold, darkness and silence. But these are the home of atoms and ions, the star dust and cosmic force, creative Deity had scattered by the breath of His power through the highways of space in the beginning of primeval creation. While these seem as nothing to man, they are the foundation stones of all creation.

This nothingness of space was the fallow ground of the universe and the formless shadow of suns and worlds. It was a universe in solution, as viewless as ether and as intangible as mind. The electric energy of space was yet unstirred by the divine fiat or shook into vibrating force by the word of creative power.

Then at the creative behest, "Let There Be Light," the ions of force, like an electric clothing of light and life, leaped into power, permeated all atoms, and wrapped as in swaddling clothes a new-born universe. Then atoms and ions of electric force met in fond and unending embrace, substance and energy clasped hands, and matter and persistent force were woven into each other's arms and saturated with electric life-giving energy.

The sun magnet, being larger and more powerful than all the others combined, would hold the others we call planets in the magnetic field of his sovereign power, and become the electric heart and commanding force of his system of world magnets. He would draw his electric life and energy from his vast electric magnetic field embracing his solar system, which with our sun is six billions of miles in diameter.

As these bodies grew in size under the law of

electric attraction, which draws all matter toward a common center, they would become more and more compressed, dense and stable, until they attained their natural equilibrium of balanced forces and assumed their permanent form and solidity. Then they would assume their normal velocity of revolution on their axis, and their orbital motion along evenly balanced lines of force, without friction or change, for countless ages. All suns and planets revolve on their axis under the law of electro-magnetism by which electric currents of force pass through their centers at their poles, and magnetic currents of equal force pass one way around them, creating their diurnal motion.

This law is briefly stated by a standard work on electricity: "A wire or any conductor having a current of electricity passing through it has lines of magnetic force passing one way around it, and the number is in direct ratio to the quantity of current passing through the wire. This magnetic effect is strongest close to the wire, and decreases inversely as the square of the distance." This is a marvelous combination of the dual forces of electricity, which operates as a wonderful mechanical contrivance to spin the heavenly orbs on their poles, like a top is spun by a string or band around it or like the cylinder of a dynamo is revolved by its leather bands or a water wheel turned by the swift current of a river. By reason of this law, all suns and planets revolve on their electric centers at their poles. The great electric currents from the sun eight thousand miles in diameter and ninety-three million miles in length, like a mighty, inexhaustible river of force and power, cause the earth

to turn over, as a water-wheel is turned by the swift current of a river. This vast stream or current of invisible power, when it starts from the photosphere of the sun, is 865,000 miles in diameter and is narrowed to a focus of 8,000 miles at the earth's surface, thus increasing its force and power a thousand-fold. The largest river on the earth is 180 miles wide at its mouth and about 3,000 miles long, but what an insignificant rivulet it is in contrast with this vast, invisible, omnipotent stream of electric life-giving power, constantly passing to and fro from sun to earth and from earth to sun.

Think of its marvelous speed! While the swiftest current of a river or the speed of a railroad train is scarcely fifty miles an hour, this mighty electric tide comes with the speed of light 186,000 miles a second, or almost 12,000,000 of miles an hour; and it turns the earth over at the rate of a thousand miles an hour by its lines of magnetic force, just as the swift tide of a river turns the water-wheel of a mill. And that the earth may turn more surely and steadily, it has vast mountain ranges running north and south from its poles, such as the Andes and the Himalayas on opposite sides of its surface, and other ranges scattered between, to act as extending flanges and paddles, like those on a water-wheel, to enable this vast electric tide to turn it more readily, and, like the brushes on an electric dynamo, to generate and draw electric currents from earth and sky, and moisture from the clouds, to bless and fertilize the earth and make it the theatre of man's life and activities.

Beneath these mountain ranges and in the outer

crust of its surface are many cavities or openings we call volcanoes connected by powerful currents of magnetism constantly circulating from the equator to the poles; and when there is an influx of water or other substance sufficient to generate electric resistance and repulsion, a fuse burns out in the circuit at that point, the volcano sparks, blazes, explodes with great force, and shoots its molten lava into the clouds, or, like Mount Pelee, blows its head off.

Another simple illustration of the universe as a vast electric mechanism is the electric street-car system in our cities. The sun represents the great central power house where the electric power is generated.

The planets represent the cars, which revolve on their axis and speed forward by the same force and in almost the same manner as the planets revolve on their poles and continue in their orbital lines of force. The trolley wire and current are the cars' electric line of force and they come and go in their circuit propelled by the electric generator at the central power house, in very much the same way as the planets revolve and come and go on their orbital circuits around the sun by the moving force and electric power of the sun.

The circuit of the electric current on the car line starts from the dynamo at the power house and returns along the rails or through the earth back to the dynamo. In like manner, the vast electric currents of the sun pass to the earth through the ether without wires and do the lighting, heating and cosmic life-work, and return to the sun completing their circuit; and the earth sends its electric

currents to the sun and they return to the earth through the ether in the same manner and complete their circuit. Thus there are vast highways and boulevards of electric currents passing from suns to planets and from planets to suns which are pathways to the stars and the great highways of eternity, on which invisible atoms, and perhaps invisible human souls, may pass from earth to suns and central suns. In the future, man will turn the searchlight of investigation upon electricity as the universal operating cause of all physical phenomena. He will solve the riddle of the universe by its subtle invisible forces. He will cease to regard creation as vast constellations of burning spheres whirling through frigid ether. He will look upon it with wonder and inspiration as a vast self-controlling, life-evolving, varied but unchanging unity, a perfect whole—a vast electric organism of omnipotent power and eternal existence. He will regard electricity as the finger touch of Deity that makes the world go round, that marks out the orbits of suns and the pathway of constellations, and guides them in their mysterious courses to their eternal and inscrutable destiny.

CHAPTER II

ELECTRICITY PRODUCES ALL THE PHENOMENA OF NATURE

I CONTEND that electricity produces all the phenomena of nature—that it is the ever active agent in evolving visible forms and substances whose results are known as laws. Man is the most perfect enfoldment of nature's electric laws, and the world and the universe are the universal expression of electric life and energy.

Man and all the visible forms of creation are woven from invisible ether by electric forces, and, as man's will and thoughts are the governing force of his electric organism, so simple and universal are the laws of nature that the will and thoughts of Deity, by electric energy, are the controlling law and force of the universe, and the ultimate cause producing all causes, all creations, and all tangible forms.

The natural world is the product of matter, and force and all matter is one matter represented by the invisible atom, and all physical force is one force, being the varied manifestations of electric energy. For the natural world is the spiritual unfoldment made manifest by electric power.

Therefore all the varied phenomena of nature, the revolution of the earth on its axis and in its orbit

around the sun, the brilliant light and governing power of the sun, the circling stars, the blazing comet, the shooting meteor, the gorgeous rainbow, the luminous aurora, and the dazzling corona are all expressions of electric power. The lightning in the cloud, the reverberations of thunder, the ebb and flow of the tides, the wind currents in the air, the swaying of the forest, the variations of heat and cold, the falling of snow, the rain drop and the dew are all electric manifestations.

You cannot raise your arm, lift your foot, or move your body except by electric energy. You cannot see or hear or feel or taste or smell or exercise any of the functions of the body without bringing to your aid the electric force which permeates all forms and substance. Electricity creates the mystery of physical life and provides the food and sustenance necessary to its growth and development. Electricity works the miracle of digestion and assimilation and converts inert matter into blood and bone, tissue and muscle, and organizes man's body into an electric machine, and runs it as truly and perfectly by electric energy as the electric motor or generator is run by electricity. Man draws his electric life currents from the air into the lungs as a great electric reservoir, there it purifies and energizes the blood and sends it as an electric fluid and circulating magnetic current through every part of the body, causing the heart valves to pulsate with measureless force and the human machine to throb with intense life and power.

The heart throbs and pulse beats of man's body are but the rythmic whir and vibrations of the human electric machine. Man makes electrical ma-

chines of wood and glass and metal, but nature makes them of flesh and blood and of all matter and substance. Nature, the all-wise and mysterious necromancer, makes nothing but electric machines from the infinitesimal atom to the self-luminous perfected dynamos—the suns and stars. All things that exist are electric generators or electric creations of marvelous construction, power and utility; and all expressions of form and power, all visible objects, and all the varied phenomena of nature are produced by electric-magnetic energy.

Franklin and Faraday, Harvey, Morse and Edison, by their discoveries have taught us that as the potter and the clay must come together to form the rudest vessels, so creative electric force must touch every sensitive atom in organic being; and keep the wellsprings of life constantly flowing through all life forms. There is no unfolding of bud and blossom, tree and shrub, without the coming and going of electric life-giving sunlight and earth light. They pervade all bodies of matter, whether world spheres or seed germs, and hold communion with all atomic centers of sensation in all living organisms. Atoms seek their electric affinities, life-forces and life-forms touch each other by the grasp of magnetic attraction and repulsion, and these give personal sensations and vital forms of being.

Through the medium of electricity, material and mental forces meet together upon the plane of human consciousness. This is nature's method of communication between the material and mental within the human brain, which has been a puzzling and difficult problem of physical science. The lan-

guage of the senses is a universal language that has its foundation in invisible forces.

There is a unity between the light and the eye that indicates their origin in the same lines of force that now give sight to the brain life. In the ear, there is evidence that the electric vibratory currents of force producing sound had a companionship with the electric life-germ in which the ear had its beginning. So all organs of sense possess unmistakable evidence of having proceeded out of those electric forces that are unseen and imponderable. The knowledge of these is the story of the Garden of Eden, incorporated into the life of every intellectual being. All the evidence of the senses comes from electric telegrams from without or within man's physical organism. Seeing and hearing are wireless telegrams from the ether without, and feeling, smelling, tasting, are wired telegrams running along the nerves of man's body and communicating with the brain—the seat of intelligence—and the reasoning soul.

Man must have a connecting link between his mind and body and the things about him; and, as that connecting link and medium in man is electricity, so plain and simple are the laws of nature that God has no other medium between him and all material creations. Electricity therefore is both the creative governing energy of Deity over the universe, and the governing energy of man over all material things. God controls the universe as man controls his body—by electricity.

Man has five senses: seeing, hearing, feeling, tasting, smelling. These are all communicated to the soul or spiritual body by electricity. Man feels by

the electric flashes that come from every part of his body, that tingle on his nerves, and beat upon the brain, and touch the garments of the living soul. He sees through the medium of the electric etheric waves of light that come from the vibrations of the air around him. By these swift electric flashes the infinitesimal rays of electric light enter the retina of the eye and touch the quick vision of the soul. He hears by the atmospheric waves of electricity that beat upon his ear drums. He tastes and smells by the same electric process; and his five senses are but the inward communication of outer surrounding conditions and substances to his spiritual perception by means of electricity. Thus the Creative Deity hears and knows, and by the same forces directs and sustains all things.

Man as an electric engine is far more efficient than any known engine in which there is a consumption of fuel. In general the amount of work a man does bears a certain proportion to the fuel he puts into his boiler. Plants also constitute forms of electric engines to embalm the suns rays and use the products rejected by men and animals.

By the radiant energy of the sun, plants are able to decompose carbonic acid. They form storage cells in which a current of electricity decomposes the liquid into oxygen and hydrogen and form materials which again give electricity, motion and heat. The sun enables the plant engine to work. It also enables the man engine and animal engine, and world engine to work by furnishing them all with the electric energy and working power of the universe, that they may do their part in the ever living forces of cosmic life. The cells of protoplasm are

infinitesimal magnets or electrical machines, all vegetables are but larger magnets, all animals still larger, till we get to worlds and suns, the greatest of them all.

All the radiant garments of creation in their varied colors of light and beauty that now appear to human vision are woven from the same garments of immortality that wrap themselves around the initial centres of magnetic attraction.

As the worlds were created by invisible electric forces under the guidance of the Omnipotent creative spirit, so the same electric forces are still carrying forward the work of their unfinished structures, and perfecting the unity and completing the harmony of creation. What we now call gravity is electric attraction and accretion that was commenced at the beginning of nature's work of creation, and which continues to be the occult force that secures the growth of a blade of grass, the unfolding of the tiniest seed with its inwrapt life-germ and the development of a world, and which brings us face to face with the creative force that was the starting point of "the beginning" and will be the culminating center of all ultimate perfected creation. This electric life energy touches each growing seed center as at the beginning it touched each growing world center and reveals the power and wisdom of creation in every evolving form of life.

The same electric radiate lines that give the parental image in the mirror by an instantaneous flash of light, give also the parental image in the germ-life that evolves a new paternity. While we cannot trace the lines of electrical union that are mingled

in this new life, we are justified in affirming that electric and radiant matter must have bridged the chasm between the old lives and the new, between parental duality and the dual forces of electricity that produced a new germinal individuality. And the new life cannot be possible without the separate unfolding of two distinct organisms meeting in generative embrace, imparting a new seed-life. All germ life has its beginning where positive and negative magnetic currents blend into unity.

The germinal life and the food supply of plant and animal fix the boundaries of its being. There can be no evolution of plant life into animal life. It is not scientific or rational; vegetable, plant and tree have no independent existence separate from the soil of the earth except as latent in seed form.

As all material organisms take on their organic form around electric or magnetic centers drawing their atoms from electrical currents, so all life-germs take their growth from the magnetic centers of their growing forms. Here in the field of electric forces is to be found the generative forces of organic matter—the mysterious births from all parental life. And the constantly revolving circle of periodic changes of growth and decay, of life and death, of seed beginning and seed producing—like sunshine and shadow, light and darkness—are opposite points in the circle of electric force and physical life. The growing and dying life-forms intervene between these two points of rest and renewal, of attraction and repulsion, of positive organism and negative diffusion of matter.

They are the results of the great electric system

of attracting and repelling currents of magnetism that are as fixed in their lines of force and order of work as the rocks at the foundations of the mountains. In fact, all that is strong and abiding in matter rests upon these currents of energy, and all of life is dependent upon the constancy and perpetually pulsating flow of the unseen electrical potencies of creation. Life is a universal unity, as light, heat, electricity and polarization, which evolve it, are unities. The order of ascending life organism is from the simple to the complex; from the lowest plane of rock formation the series is upward; from the lowest form of vegetable life it is up to the highest, and in the animal life upward till the crowning work is reached in the thinking animal we call man, who is more than a thinking animal.

To each ascending form there is an endowment of self-perpetuation by parentage and seed fruitage, which involve the electro-magnetic condition of germ life. Thus by electrical forces plants build within each other and form others by elementary atoms, with power of self-propagation, bridging the life-gulf between silent atom and living organism as if they were the material work of some spiritual builder.

Thus by electrical forces nature builds all human and animal life-forms and organisms. The primary atoms of matter have their home in the electro-magnetic forces and are evolved from them into the material organisms of creation. When the electro-magnetic origin of light, heat, physical life and so-called gravitation is fully accepted and their dynamic energy traced to its potential body, we have reached the strength of primary forces and the unending circle of electrical potencies.

This brings us to the border land of creative work, to the mysterious sea of all life-giving forces, and the universal basis of all existing creations.

Here spirit, matter, and electricity—the three great basic entities of creation—work together in full accord in evolving and fashioning all material growth and material structures. In natural growth protoplasm gives the material conditions of life without which there could be no food supplies.

They contain grouped elements of oxygen, nitrogen, hydrogen and carbon out of which living structures are reared. Life is dependent upon food supplies of matter, which supplies must be raised to radiant conditions by electric forces to secure its assimilation into living organic forms. Life, therefore, like light, seeks through magnetic action a radiant plane of matter where it can reveal its working presence. Upon such a plane all forms of life come to birth from a common parentage—from electric force and radiant matter, each form endowed with personality, and powers of reproduction that make them factors of life and growth upon the radiant plane of creative potencies.

Prof. G. F. Wright of Oberlin says in a recent article: "Evolution does not solve the mysteries of the universe. It simply pushes them one step further back. The mystery of the acorn is greater than the mystery of the oak, for it has compressed in it all the 'power and potency' of the oak. It is no explanation of a chick to say it is hatched from an egg. The wonder and the mystery is simply carried back to that infinitesimal point in the egg which conceals within itself the power of producing the feathered biped with all its marvelous instincts

and adapted organism." I hold that the infinitesimal point in the egg and the acorn is its electric center of life-force, or magnetic core, which, under the law of organic affinity, develops by nutrition and respiration, which are electric processess, into the chick and the oak. He says: "So, of all the processes of nature, man's vision sees only the surface. We do not see causes but only effects. We plant a seed, and all that we see is that under certain conditions it springs up and produces the blade, then the ear, and last the full corn in the ear. No one knows how it comes about that two seeds which look alike under the same conditions produce different colored flowers and different qualities of fruit. The beginning of everything is a mystery. If one affirms that things have no beginning he but increases the mystery. The difficulty with all theories of evolution is to get a starting point. "The time was when philosophers could speak of the universe as eternal. The geologists fifty years ago could do so, but the demonstration of the conservation of energy has put an end to any such easy-going speculation."

All this is well stated and very true, except that by treating all things as electro-magnets, drawing positive and negative atoms or ions from air, food and water, we see how by nutrition and accretion animal and vegetable organism may be evolved by the law of magnetic attraction and organic affinity. This is the only rational solution and is in accord with all the processes of nature and with the conservation of energy. Elsewhere I have endeavored to explain how, by the constant renewal of matter and electric energy in the sun and in

space, the universe may be eternal and no waste or deterioration occur and, while always changing, is virtually changeless.

Newton in his theory of gravitation discovered one phase of electric energy, and his law of gravitation is in reality simply the law of electrical attraction. But he never knew the cause of it and never discovered the other and dual phase of electric energy—the law of electrical repulsion, he never even suspected it. For he held that the balancing force of gravitation of the other planets kept each planet from falling into the sun, which it otherwise would have done under the law of gravitation, which says large bodies attract smaller ones. This position was untenable, as I have shown in "The Cities of the Sun."

Newton thought that an apple was attracted to the earth because the earth was larger, and that any larger body would attract a smaller one. But I hold that size is not what controls attraction; it is electrical conditions. An amount of substance from the sun would have more attracting power than the same amount from the earth, because the sun has more electrical power. A lodestone has more attracting power than the same amount of ordinary substance. A pound of iron has no attracting force untill it is magnetized; then it will lift many times its weight. So size, weight, or gravity is no test of attracting power.

I therefore repudiate the law of gravity and adopt electricity, with its dual force of action and reaction, attraction and repulsion, as the supreme cosmic evolving force of the universe, creating all light, heat and life and producing all the varied and wonderful phenomena of nature.

I hold that by the law of electric energy the sun is not a thermal or heating engine as the astronomers proclaim, but is an electric generator and is not hot, and that the sun's rays, neither where they originate or where they act are hot, but they come to the earth as cool currents of electricity, which generate heat near the earth's surface by coming in contact with an opposite electricity and the resistance and friction of its atmosphere. Proof of this is found in the snow-covered peaks of the tropics and the glaciers of the torrid zone.

I have waited six years for objections to the electric theory of creation and have found only one recently stated. This first and only objection is that electricity is a derivative force.

Prof. G. F. Wright, of Oberlin, in an article in the Chicago Record, Dec., 1902, says: "Many of the speculations concerning the unlimited use of electricity overlook the fact of its derivative origin. Electricity is but transformed force. It is not a producer of force but a consumer of force. It merely directs the force to its specific end. The electricity which propels and warms the street cars of Buffalo, and furnishes power to its small factories and illuminates its streets is merely force diverted from the Falls of Niagara; in other words, it is transformed gravitation."

True, but gravitation is simply electric attraction, and the electricity that propels, lights and warms the cars is electric attraction diverted from the Falls and used on the cars. It is not derivative force, but the original and only force—electric force transferred from the Falls to the cars.

But Prof. Wright himself destroys his own argu-

ment when he says: "In other cases the electricity is derived from the heat of consuming coal, while the coal is the product of the sun's rays, chemically sealed up in the coal deposits of the early geological ages. Indeed it is easy to see that all the available force in the world is the product of the sun's rays." In this we fully agree, for I say the heat of the coal and the heat of the sun is electricity. The sun's rays, which he says "is all the available force in the world," is electricity, and the sun is the great electric heart of the solar system. Thus we differ only in terms. While he whips electricity around the stump, and says it is a new thing every time he turns a corner, I say it is the same electricity, without any change, and proves the oneness of the universe as a vast electric organism.

Thus our great scientists befog themselves. Now that Langley says there is only one radiant matter, and light, heat and chemical changes are all one entity, perhaps he may change his view. I have tried to convince these crosseyed reasoners that all force is one force and all matter is one matter, and the scientists are now coming to that conclusion steadily.

Prof. Wright says again: "The strength and warmth of all animal bodies is traceable to carbon, and whenever we move a limb or walk, the power to do it is obtained by the consumption of carbon." Well, I say carbon is one form of stored electricity. He says: "The ox feeds upon the grass which is collected or grows through the influence of sunlight," and I say sunlight is electric currents from the great electric dynamo, the sun.

He says: "The nebular theory is faulty," and I

agree with him. He says: "Gravitation is an utter mystery that has baffled all scientific explanation," and I agree with him, and go a step further and affirm that there is no such thing as gravitation and never was. Newton discovered one of the dual forces of electricity, which I call universal electric attraction, and called it gravitation.

He says: "So far as we can see, gravitation acts instantaneously, and Newton gave up the problem of defining it, and said he had no explanation except to say God so made it." This is true, but Newton knew nothing of electricity or his great intellect would likely have discovered the truth and named and explained it as electric attraction.

Newton discovered an imaginary force, an idea, a dream, "an occult force," as Leibnitz called it. Newton had an imagination which the scientific plodders who have come after him lacked. They have dug in the dirt, while he sailed through azure seas, and linked suns and worlds together by a mere sweep of the imagination, without any explanation or conceivable cause, and called it gravity. He might just as well have called it ponderosity.

Phillip Akinson, in his work on electricity, 1902, asserts that "energy manifests itself either in masses of matter or in small particles, called molecules, and thus we have two kinds—mass energy and molecular energy." But have we two kinds of energy? Mass energy and molecular energy is the same.

Mass energy is but the aggregation of molecular energy.

Large bodies attract small ones because they possess more electric energy. Gravity or weight is but another name for aggregate molecular electric attrac-

tion of the earth for everything upon its surface. The gravity or weight of a man is the pull or force with which the electric attraction of the earth holds him to its surface. In other words, the earth is a vast magnet, and man's body is a smaller magnet, and as the magnetic core of a steel magnet draws all metals towards its magnetic center, so does the earth magnet draw all things toward its center.

The same author states that, "the earth is a great thermopile generating electric currents by the difference of potential between its heated and cooled parts." In this I agree with him, but he only states one of a thousand ways to generate electric currents.

He says further: "Heat is believed to be a certain mode of molecular motion, and electricity to be another mode; but the nature of the motion of each has never been discovered." And I think never will, as long as the false notion prevails that heat and electricity are modes of motion. A mode of motion is nonsense, for motion is an effect produced by a cause—it is not a cause. And all cause of motion is electricity, and the mode of operation is the law of electro-magnetism.

There is no difference in the law or the mode of operation of electric currents in a volcano, in a cloud, in the earth, in the sun or planets, in an electric light, or in a man's body. The same law exists and the same natural results follow when one lights the gas with a flash of electricity from his finger, as when a meteor blazes, a comet flares out in space, or a sun becomes luminous. The same force that man causes to run along a telegraph wire, or through a telephone circuit, or which runs a street car line, or is taken by the brushes from a

revolving dynamo, is the same force and operated under the same law or mode of force as the electric life-giving currents that come from the sun constantly in an omnipotent tide of power.

Prof. Thomson says: "The earth is generally found to be negatively electrified, and is insulated in its atmosphere, being in fact a conductor touched only by air—a strong insulator."

He says further: "The quality of non-resistance to electric force of the interplanetary ether being considered, the earth, the atmosphere and the surrounding medium may be regarded as constituting respectively, the inner coating, the dielectric and the outer coating of a large Layden jar charged negatively."

Prof. S. P. Thomson in "Electricity and Magnetism," says: "Gilbert made the discovery that the compass points north and south because the earth is also a great magnet. Faraday said: 'All matter is in a magnetic condition.' Sir Oliver Lodge says: 'The idea that magnetism is a whirl of electricity is as old as Ampere. Perceiving that a magnet could be initiated by an electric whirl, he made the hypothesis that an electric whirl existed in every magnet.'"

Maxwell announced the proposition that electromagnetic phenomena and light phenomena have their origin in the same medium and are identical in nature. Hertz, by actually producing, detecting and controlling electric waves, caused the discovery of wireless electricity. And it is by the wonderful wireless telegraphy of light that man is put in communication with every considerable body in the universe, including even the invisible. By it the

goings on in Sirius and Algol, Orion and the Pleiades are reported across enormous stretches of millions of millions of miles of space. And by the vibratory motion of the invisibly small, all things are revealed; the infinitely little has enabled us to conquer the inconceivably big. I hold seeing and hearing are the simplest examples of wireless telegraphy.

Elihu Thomson, the great electrician, says: "Hertz proved that all luminous phenomena are in essence electrical. Wireless electricity is the outcome of Hertz's experiments on electric waves, and electrical conditions and actions are more fundamental than hitherto regarded."

William Ramsey, the distinguished chemist, says: "It is a primary assumption that atoms of elements or in certain cases groups of atoms are themselves electrified, and atoms possess positive and negative poles, and combinations ensue between such oppositely electrified bodies."

Mr. Francis Grierson, a prominent scientist of London, in a recent London periodical, says: "So far as we know electricity is the soul of visible form. What we call brain waves have an analogy to electric waves. The discoveries and inventions of the last ten years have made child's play of every previously known system of philosophy. The simple but amazing facts disclosed during the past five years, render the dreams, speculations and guesswork of the past absurd. The little we know in a practical way is more than all the philosphers of the past knew from Aristotle to Leibnitz."

Prof. Langley, in his address at the 1902 session of the American Association of Science, stated that,

"up to 1872 it was almost universally believed that there were three different kinds of energy—actinic, luminous and thermal—represented in the spectrum;" but he affirmed: "There is only one radiant energy which appears to us as actinic, luminous or thermal, according to the way we observe it.

"Heat and light are not things in themselves, but different sensations in our bodies, or different effects in other bodies. They are merely effects of this mysterious thing we call radiant energy." He thus sustains my position and the electric theory of creation, which is, that there is but one universal and ultimate energy which he calls radiant and I call electric energy, and which are the same thing.

It is said that an Italian physicist wrote in 1843: "Light is merely a series of colorific indications, sensible to the organs of light, or vice versa; the radiations of obscure heat are veritable invisible radiations of light." This Langley, by his elaborate researches, more refined and complex than all preceeding ones, proved to be true. Since so orthodox a scientist as Langley has proven there is but one energy, the other scientists may stumble over it awhile and then accept it, because he is high authority.

Sir Oliver Lodge, in the "Electrical World," of February 21st, 1903, sustains the electrical theory strongly. He says: "All matter is electrical in its nature. The difference between one kind of matter and another lies in the physical and chemical properties of the atoms; but the difference between the atoms is merely due to the difference of the electric grouping of the atoms."

He holds that the Thompson corpuscles are all elec-

tric. Thomson's theory is that negative electricity is matter. Lodge holds that all matter down to the ultimate corpuscle is electricity or electrical substance. Thus I am sustained by the highest most recent authority.

Prof. E. L. Larkin, of the California University, said recently: "The earth has a permanent charge of negative electricity, and the atmosphere is positive. The surface potential is therefore very near zero. This permits electro-magnetic waves from the sun to act with unabated energy." Prof. Lucien I. Blake of the Kansas University said in a recent lecture: "All atoms of matter are charged with electricity. All vital actions are always connected with electricity."

I could fill a volume with recent statements of scientists showing that electricity produces all the phenomena of nature, all of which they have learned in the last few years, while as a pioneer in this field of thought I have been trying to propagate these electrical theories for many years.

Every year new facts are discovered showing that electricity is the cosmic, evolving, ultimate and only force in nature and the universe is a vast electric machine or organism moved by electric currents of measureless force and power. The earth revolves around the sun, the sun gravitates around some siderial center in motion like itself, and myriads of suns and planets with their countless population move with many times the velocity of a cannon ball. Stars that seem tranquil and motionless in the heavens are projected through space with a velocity of one hundred to two hundred miles per second. The constituent atoms of our bodies move

relatively with as much velocity as the stars in heaven. Motion—electric energy—reigns everywhere, forms everything, controls, handles and evolves all suns and planets, all physical life, substance and organisms in human experience and universal nature.

The electric rays of light from suns and stars of the most distant constellations dart their beams across the universe, and centuries after, the impulse of electric energy enters the human eye, and gives sense and vision to the soul. Thus the dynamic chains of electric light binds into living unity the realms of matter and mind, "through measureless amplitudes of space and time."

These electric currents are not only the source of all natural phenomena, but the sea of electro-magnetism from which they come is the reservoir of life, which stands back of all the myriad manifestations of physical existence, and is the great fountain of vitality from which all life must come.

What is electricity? Tesla says it is "invisible light," Atkins says it is "molecular motion," Fleming says it is "a spiral twist of the ether," but the best definition is given in the Scriptures where it says all things were made by the "word of His power." It is the word of creative power.

CHAPTER III

ELECTRICAL CREATION, BRIEFLY STATED. IT SEEMS TO SOLVE THE RIDDLE OF THE UNIVERSE

As the nebular hypothesis and gravitation explain nothing and show neither the primary elements nor the primary energy of the universe, we should go to the dual forces of electricity which do. As we have learned little more than a name from either, I think it is time to try another hypothesis. Walking single file in dead men's shoes for two hundred years is quite long enough.

I am willing to submit the following hypothesis as my conception of electrical creation and the true theory of the universe.

First—Creation was wrought out by the agency of electrical forces, operating on invisible elementary matter, controlled by the intellectual impulse of an infinite power.

Second—These creative cosmic forces, by condensing the suns and planets into vast magnets revolving in a sea of electro-magnetic forces, evolved the marvelous machinery of the universe.

Third—This machinery of the universe became self-propelling and self-sustaining by reason of the laws of motion, growth and evolution impressed upon it, or by the joint sovereignty of two equal, correlative forces: magnetism, a form of electricity

maintains the sovereignty of attraction over matter in body, while electricity, another phase of the same force, maintains the sovereignty of repulsion over matter in space.

Fourth—For these reasons electricity is a universal power joining together the two kingdoms of the heavens and the earth—of matter in body and matter in space. And these forces in their unity of harmonious work can suffer no disturbance equal "to the dust in the balance."

Fifth—These floods of electricity and magnetism affect the least and the greatest, "directly as to mass, and inversely to the square of the distance."

Sixth—The sun and planets are vast magnets because they are held in charge of electro-magnetic forces in an immense magnetic field. These forces are not from these bodies originally, but these bodies are from these forces; and these forces antedate all forms of visible matter.

Seventh—The primary state of matter is the diffused etheric, invisible state, and the building of matter into body is the work of these forces when in charge of matter under organic affinities. Magnetic lines of force fix centres and build around such centres by drawing elemental matter from the radiant sea of space by magnetic energy, into globular forms that become growing worlds, drawing their power and increase of form from the sea of invisible matter in which they are fixed by their axis and orbit lines of motion and force, constituting them working electro-magnets.

Eighth—These electro-magnetic forces are the eternal cosmic forces of perpetual motion, ever working by the law of action and reaction, attraction

and repulsion, and evolving world forms and animal and vegetable forms.

Ninth—The sun having grown from the sea of invisible etheric and nebulous matter by reason of these wonderful electro-magnetic forces into an immense magnet, larger than all the lesser magnets or planets of the solar system combined, holds them in the magnetic field of his sovereign power, and is, through the flowing currents of electricity, the creating, governing force in the solar system.

Tenth—These same electric forces are condensed into smaller magnets and electric organisms or machines, which form electric centres and build up all tangible forms of matter—human, animal and vegetable. And all visible matter is but the outer shell and visible garment of these invisible forces.

Eleventh—Without the floods of electric substance or power that come to us in the electric currents of the sun that flow in currents of strength through our bodies as they propel the inflowing and outflowing floods of atomic elements of matter, that are laden with incoming supplies of daily life and outgoing wastes, by attraction and repulsion, assimilation of food, respiration and perspiration, our bodily forms would perish or be wholly unfit for the dwelling-place of our spirits.

Twelfth—Our five senses—seeing, hearing, tasting, smelling, feeling—that connect us with the world of matter are entirely dependent on electricity and the invisible etheric forms of matter that surround us everywhere and constitute the connecting ties, the invisible ligaments, that pervade and bind all forms of life in nature's wondrous harmony.

Thirteenth—The boundless fountain of infinite

energy in atoms in body and atoms through measureless space are superior to any mere sun form or world form of visible expression of such energy. The floods of radiant electric energy that enwrap the sun and planets in orbital lines of omnipotent strength are to these bodies the everlasting fountains from which flow their upholding and evolving power and the conservation of force in their transforming energy.

Fourteenth—As all visible forms of matter are built from invisible elementary atoms, so the most efficient display of electric power finds its expression and source in the same elementary atoms. The electric power working in all atoms of matter gathered in planetary form, saturates such planetary bodies with electric energy, as the steel of the magnet is saturated with such forces, and reveals in the sun currents the source of all terrestrial power and organic life.

Fifteenth—The chemists claim to have discovered about seventy different elemental substances in matter, but they are not primary elementary substances; they are secondary, and caused by the marvelous electrical combinations of the two primary elements—atoms and electricity—and are what Herschel said they looked to be, "manufactured articles."

Sixteenth—The laws of magnetic attraction teach us that positive and negative polar forces, flowing oppositely between sun and earth, establish the bond of union between them, and the transmission of electric energy must be equal between them, and the flow through space at the low level of latent energy.

These two oppositely flowing floods of electric energy, under the great law of electro-magnetic attraction, pass through ninety-three million miles of radiant matter in eight minutes of time and enter the resisting atmosphere of sun and earth, their currents thrilling with energy at the high tension of opposite polarities beneath their atmospheric envelope. Thus the attraction known as gravitation, but which is electro-magnetism, pours a constant flood of light and heat upon both sun and planets, and thus the electric light and heat of the sun and planets evolved from their resisting atmosphere, and the contact of their positive and negative electricity, become creative potencies, deriving their vast power from each other, and from their environing space of virgin, imponderable matter, and thereby give life, motion and utility to all visible created things.

Thus we find that light, heat and vital force is created by the contact of the positive and negative electricity in the magnetic atmosphere of suns and worlds. That the electric affinities in matter proclaim an electric origin, and the invisible atom as the material basis of all material life; and by tracing their source to electrical and magnetic energy, we have reached the foundation upon which is built the eternal structures of the universe, and the bounds of all creation.

CHAPTER IV

ELECTRICAL CREATON MORE FULLY STATED CONFIRMS SCIENTIFIC EVOLUTION

I CONTEND that electrical creation confirms scientific evolution. In the beginning the elements assumed form when they came into such a state of electrical balance as enabled them to move in uniform order. The more perfect the order the more perfect the form. The crystal is fine proof of this, for when the elements composing it are all marshaled into perfect uniformity of action the crystal becomes a perfect structure well nigh indestructible. This principle of the crystalline formation of the elements is the basis of world building.

In a small volume entitled "Planetary Evolution," the learned author, who is too modest to give his name, says: "Atoms are absolute potentialities, creative rather than created conditions of the elements, and have the power of inherent energy or life motion. All tests show the atom remains the inscrutable source of creative power, and the basis of all chemical activity, and must be the basic principle of world building, life motion and life energy.

"In all the operations of chemical transmutations no material is lost and no power wasted, and, by the law of the conservation and correlation of force, both energy and material must exist as correlatives.

This places the nature of matter upon the same basis as the origin of power. The transformation of force into material is impossible. Force follows the laws of motion, and atoms the law of form obedient to the lines of motion." This is well stated.

This author says further: "The atom has the power to assume form and create form, and matter and force cannot be transformed into each other." Then this power or force must come from electricity, the primary force in nature; and it has power to assume form and create form by reason of electric energy controlled by spirit intelligence. In planetary construction the first thing that meets our vision is the arrangement of the atoms in crystalline formation, which is the foundation of all planetary structure. The atoms in space continually change their relative positions and construct world forms and organic forms of beauty and power. They settle into globular spheres with all the precision of a trained army or a disciplined mass of life and energy, forming the crystalline masses that compose the primitive foundations of the earth.

Polarity has much to do with the phenomena of crystallization. The same author says: "Polarity is the result of the transverse lines in which the atoms move previous to their comparative arrest. The planet as a globe can have only two poles, but the crystal has as many as the lines of direction in which the moving atoms cross each other's path."

In interstellar space he affirms the atomic relations of the elements are undisturbed by any power that would tend to divert the atom from its movement in a straight line; force is transmitted from atom to atom without any effect upon its motion

or change of equilibrium. The power of transfer is the basic principle of the electric current, and as long as the direction of the current lies in one of the lines of atomic motion the current passes without resistance and is imperceptible; but if it chances to meet in its pathway a line of force passing from atom to atom in a different direction, there is instantly a neutralization of motion and the arrest of each atom at the point of crossing which gives polarity, and the molecule is the result. In space the electric current is the first form of creative manifestations the atoms assume.

Electricity belongs to the atomic forces, has intimate relations with organic life, and gives us a key to unlock its mysteries. Electric energy plays such an important part in cosmic construction that without some knowledge of its nature it is impossible to explain the processes which are the basis of world building.

The crystal rock under microscopic examination shows the same beautiful figures and marvelous lines of arrangement that in winter the new fallen snow-flakes exhibit, and indicate that the lines of form are essentially the same that gave the planetary rock its forms of crystalline beauty and massive structure. And the beautiful snow that falls so gently upon the wintry lap of earth is one of the best representatives of creative power acting in the primitive states of formative forces. This tends to show that the earth began its formative period in extreme cold and not heat, for the formative lines of shape and force are the same in the crystal ice and crystalline snowflake as they are in the crystalline rocks of earth's primary foundations. And they all

indicate the lines of electric energy and magnetic force in atomic activity and molecular formations, which are the beginning of all visible material creations.

The shaping of the molecules of the so-called cosmic elements by electric energy into crystalline form is the second great step in world building. While magnetism (the dual force of electricity) serves to hold the form-structure in more or less enduring relations, for the magnet has the power to radiate atomic force in circles and tends to draw the elements into form and hold them there. The electric force keeps the atoms always moving; the magnetic force keeps them or would keep them in atomic balance, or at rest, but electricity keeps magnetism always on the alert, and between the action of the two, or attraction and repulsion, all visible forms are evolved and dissolved.

Thus magnetism is the centripetal force, of planetary construction, and electricity the centrifugal power of planetary changes, and upon these two depend all the complex varieties of inorganic and organic forms that exist. And so long as they exist with their powers of atomic motion so long will world building and form building continue, and must continue through the æons of creative force.

The magnetic state of the earth, with the pulsating currents of electric force in the atomic and radiant form, plays a sovereign part in the economy of nature and makes the planet itself alive with creative force and evolving power.

To demonstrate electrical power in world building and the shifting relations of the elements in the planetary combinations, watch the electric plating

battery at work. There you will see the atoms in the solution flowing towards the negative pole and depositing themselves in minute crystals upon the metallic surface, if the negative pole is a metal, and adhering with great pertinacity; the metallic crystals penetrate the crystalline surface of the substance to be plated in minute arms filling up the infinitesimal space, and the atoms in this process transfer their atomic motion in line with the electric force, and become arrested as in the primitive state when they formed the crystalline foundations of primitive earth. It will be found that the power or electric force required to plate one metal is just the same as to disintegrate it, and the electric force is a great solvent, while the magnetic force is a concentrating form-moulding world-building power. And these two forces evenly balanced perpetuate the universe. The fluidic condition of matter arises from molecular activity before the atoms have assumed the crystalline state, and all fluids are easily vaporized to invisible gases.

The primitive planet, in coming from nebula to crystalline form, had to pass through the fluidic state, because the electric atomic balance had not yet been acquired sufficient to produce solidity.

In this stage there could be no organic life; but the earth was enveloped in dense clouds of vapor, and there was no light for many ages, because the earth's surface was below the electric and atomic rate that produced light, and the dense gases and vapors floating around it and between it and the sun prevented the light penetrating its atmospheric pall of darkness.

But in that darkness and vapor and cosmic con-

vulsions was going forward the processes of organic construction essential to fit it for the coming generations of sentient life. Night and darkness ruled, but chaos had no part, and never ruled in all the cycles of creative power. The direct currents of electric force and the circular currents of magnetic power swept through and through earth's molecular structure, ranging the atoms in all the lines of crystal perfection and spherical form, and laying the rock-ribbed foundations in geological stratas in the heart and center of a growing world.

The lines of electro-magnetic force at this period in the planet, with their circular spiral motion, would shape the world into a globular spherical form, and the elements in watery solution would almost come into crystalline firmness, and then an impulse of electrical power would throw them into restless agitation; and again they would respond to the grasp of magnetic strength and return to a state of partial arrest near the crystal condition, and again sway back to the electric primitive molecular state. But they could not get free from the lines of magnetic force which held them with giant grasp until they were incorporated into the foundation rocks of earth's solidifying sphere. And the centre of our planet became a vast solid crystalline magnet, and was never a fiery mist or molten substance.

Finally when the crystalline rocks were settled into a crystalline globe the life-cell was born as the basis of a new condition of planetary form. And in the dark waters where no light was, organic life under the law of creative electric energy began its work upon the planet. The life-cell is the resultant of electric-magnetic action.

During this period of primeval "darkness upon the face of the earth," the resistless electric waves of the sun were beating upon the cloud-enwrapped surface of the planet, but its light had no power to penetrate its cimmerian gloom. And the earth was sending back its pulsating magnetic currents to the sun, and both were evolving themselves into giant dynamos of marvelous electric power—giving and receiving electric currents of positive and negative polarity of wonderful life-giving potency. Gradually the earth solidified into a vast magnet of crystalline rock and metal and like the magnetic core of a steel magnet of vast extent and power, it drew millions of meteors from space.

The internal electric forces in volcanic convulsions were upheaving islands, continents and mountain ranges, rending the rocks and crystalline strata in the contracting crust of the earth, amid lightning flashes and resounding crashes of thunder, like the fabled Titans in primeval battle. It was a contest of the giant forces in their elemental power baptizing a world in the fires of creative and creating energy. The planet was shaken by magnetic force and torn and agitated by electric storms. Gigantic boulders were dislodged from the surface and ground into powder against each other, making soil for coming vegetation and marking out the pathway of the rivers and valleys. It was the adjustment of elemental forces, the night of ages in whose depths and womb of viewless power conscious life originated by electric energy under the evolving law of evolution as the will of Creative Deity. And the mountain ranges following the lines of axial direction of the two poles upon opposite sides of the planet be-

gan to slowly rise above the surrounding waters, and lifted their mighty crests above a world floating in surging waters, and darkness, except as it was lit up by lightning gleams of electric power. It may be that during this stage of the planet was laid the foundation of all the distinctive types of life-force, including the cell forms that lay at the basis of living structure, the plant forms and the living forms of animalcular life that float in the ocean below and mists above. All of which had their home and birth in the dense darkness that covered the face of the deep.

It was the formative period of elementary life, and the descendants and successors of that mighty host of living beings have to this day to lay the foundations of their being in similar conditions of darkness. Creative energy in its first stages of living form operates in dense darkness, and the first life upon the planet began and perfected itself in the age when midnight gloom enveloped the globe. "The Supreme Power," says the author of "Planetary Evolution," "wrought out its purpose with no eye to discern its workings and no helpless ignorance to dictate what was needed to make a world." The deep-sea soundings show that life still exists there without the aid of sunlight and that there is no limit to the domain of organic life. And the necessity exists even at this age for darkness during the formative processes of embryonic life.

All microscopic life embodies the essential characteristics of activity and form that distinguish many of the distinct types of animal and vegetable life. The mould that gathers upon decaying bread is a great forest when sufficiently magnified. The wig-

gling animalculæ in the stagnant water is but a prototype of the writhing serpent of the Brazilian forest. In these two types of minute organic being we see the first stages of life in planetary formation. And the induced electric energy on the animalculine organism compelled it to both growth and activity, and, obedient to that principle, it added cell to cell in any direction that that electric energy in that form sought relief, thus producing different types of organic structure. The influence of the pent-up currents of electric energy was destined to have a moulding power upon the higher types of organic life, for their influence upon the living form soon became manifest in the construction of nerve-tissue, which is the basis of all animal structure, and the beginning of all embryotic form, and is essentially the same in all organic life.

All attempts of science to formulate a theory of the source of life end in an abstraction. To teach that life originates in a germ leads to an analysis that shows the germ is a compound form itself, and one of the stages of incipient life. The advocate of the cell as the primitive source of life soon discovers that the cell is the result of chemical forces that have not yet arrived at the germ state, and that both the germ and the cell are but successive stages of life development, and we must go further back into the realm of the invisible electro-magnetic forces for the true source of physical life. Here the untrained intellect is bewildered and is unable to discern any relation of force beyond the physical senses, and science and reasoning causation must explore the invisible realities, and realms of force beyond the physical senses, which requires the high-

est order of mental training. It is in the mental realm, the realm of spirit and electricity, that we must seek the solution of all the higher problems of life and destiny.

In the spermatozoa of the male is the first evolution of the organic life of the planet. It is the electro-chemical combination of elements in which the primitive cell was formed, and in nature's corresponding environment it goes steadily forward through all previous stages until perfected in form, and becomes a miniature production of its parent structure. It thus unconsciously followed the forces and elements of the parent organism whereby that parent organism came into being from its parent, and so on backward for generations and ages. And in order to perfect the power of sex to the highest degree and preserve the life of the race, there was a differentiation in the embryonic state, whereby one organism, the male, became the power to preserve the energy, while the other, the female, became the environment to perfect the form.

This was no miracle, but a response of the organism to the waves of electric power in the planet, which at times and conditions would be more positive or negative in their electric energy. For all the elements of life and the universe animate and inanimate are sexual, male or female, positive or negative, in their natural relations.

The higher types of life are almost wholly dependent upon the arrangement of the cells on a high electric tension, and the early forms were almost wholly of nerve-tissue structures, and the primitive animalculæ followed the law of differentiation and were able to construct muscular fiber and bone for-

mation, and became the fish and reptiles that inhabited the ancient seas.

The processes of planetary formation are resultants of electrical action among the elements that form the planet, and here is the true field of scientific research for the knowledge of causation as expressed through world construction. To the chemist and electrician belong the task of explaining the processes of world building as well as the secrets of life itself, and they must be found in the laws that control the electro-magnetic ether that permeates all atoms and space.

In the paleozoic age there were surging tides of electric energy through the planet itself, producing induced currents in all the forming bodies upon its surface. And these primative currents swept the cell-formations into lines parallel with their lines of force the same as crystallizations, and as they were floating in circumambient water, the cells took the form of tissue structure, forming organs that followed the crystalline law of self preservation, and, in response to changing electric currents, throwing out new cell-structures.

Nerve tissue is the highest form of atomic balance that is visible, and the true basis of form structure that has vitality to meet the shifting electric currents. The tiny cells joined themselves to form new structures to respond to the electric waves, while the lower magnetic induction of the planet sent its power over the new tissue to hold it in form so that the organism could be partially permanent in form in its new environment. In this manner the organism grew and expanded from the primitive animalcular nerve type to the consolidated, firm tissue that

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enabled it to hold itself from dissolution under adverse conditions and planetary changes. The action of electric force in building secondary forms with a magnetism of their own is one of the most wonderful exhibitions of nature.

And now comes a startling result of this type of energy that has called living organism into being from the lower grades of atomic life. The cells that have formed themselves around a central point, as in the crystalline state, begin to quiver and vibrate with a strong rapidity that defies all power of restraint. In them is to be seen a new relation of the elements that grade still higher in the scale of atomic action. They have risen in the power of sensitiveness above the plane of receptive response to the swaying currents of the earth, and begin to send out currents of their own. Those currents penetrate the whole system with strange energy, and the organism begins to respond with new expressions of power. It moves with reference to the currents that it creates itself, and we have the first type of creation with a brain center governing the whole system.

That brain tissue is the result of the action indirect of the electric energy that is sweeping the planet in ceaseless lines of force and power. It sends its induced currents upon all the forming host of animalcular life floating in the dark waters, and some begin to grow brains.

The cellular structure ranges itself in line with the positive and negative polarity that made the crystalline form of the world a globe, and from that living cell-battery go out the currents that control the form by the inward force that ever after is to witness to the power of constructive energy to create living

beings with sentient power to regulate and control their own destiny.

Meanwhile the surging tides of electric energy are forcing the continents upward, and the fish that swim in the paleozoic seas find the waters receding and himself part of the time on the land or in the mud and shallows, and the growing organism, from generation to generation becomes adapted to each condition of life on land and water. Then comes to pass the raising of the organism from the fish to the reptile by the influence of electrical induction and change of environment. Then also comes the growth of plant life, and the marvelous varieties of vegetation in the form of tree and shrub and grass. Upon the land, half submerged, the vegetation that had its rootlets in the former ocean bed grew from sea weeds into rank grasses and ferns, the types of which are seen to this day in the dense forests and jungles of the tropics.

In the early period of the paleozoic age the molusks, polyps, and marine plants were evolved without any reference to light whatever and depended on the sense of feeling to provide for the necessary food supplies to maintain their organism.

We have in the night-blooming cereus a flower that belonged in that epoch of the world's evolution when plants flowered and perfected their seed bearing in the dark. And in the salamander, beaver and hippopotamus a type of the amphibious animals of the early ages. We have in the bat a type of animal that flourished in the darkness of earth's formative period, and in the embryonic period of animal and man we find the beginning of the life processes in the darkness of the womb, and all seed of vegetable and

plant must be buried in the darkness of earth before it can bring forth new life.

Every living structure on the planet takes form by the laws of nature's creative processes; and the secret unfolding of life structure to-day, however perfect at maturity, is a complete record of all the previous stages of formative growth in animal life, from the vertebra of the fish to the contour of the mammal and the man, condensed as to time during the period of gestation, but following the original lines of formative structure, power and principle.

This and all growth and evolution is the result of electrical energy under divine law and spiritual control. Electrical power is the great agent in arranging molecular compounds into all forms of animal and plant life as well as crystalline structures and world forms. The duplicates of plant life with the secondary crystalline forms are found in limestone caverns of the earth. There, in the dense stillness of eternal night, many forms that are seen above ground as plants and flowers are there wrought out in solid stone, as the crystalline limestone rock has arranged its molecular structure obedient to the same lines of form as the electric currents in the upper atmosphere follow in vegetable life.

Thus in the eternal nature of the atom and electric energy with their inherent potencies the Creator has abundant resources not only to make this planet, but also the countless worlds of boundless space. And in the wonders of electrical potency in this planet alone He is constantly producing results that excite profound gratitude and reverence. At length when the clouds of darkness faded away and the atmosphere became translucent, and the glorious

light of the sun—the great electric heart of our system of worlds—shone upon the earth, there was a new realm of infinite life and expression to lift the world and all organic life to a higher state of perfection.

While the world, like an enormous battery, had in itself enough energy to hold the planet in its spherical form and to stimulate to activity the secondary forms of life, had not the sun come into more vigorous activity with its electric life-giving energy the earth could not have gone above the primitive forms of life. With this greater influx of power from another sphere of causative energy, the dark age of animality passed and the monstrous types faded out, and in the place of them the world began to bear a class of beings that could reflect the power and principles of light and beauty. And under the pulsations of the sun's electrical and magnetic energy the earth started on its marvelous career of organic growth and development.

The sun, as an immense electrical reservoir battery, must radiate in all directions its electric vibratory power over the surging elements in its own environment and from thence through electric atomic transfer to bodies in space. So that whenever a body was in direct line with the magnetic centers of the sun, the arrest of the electric current and atomic motion coming from the sun's center by another magnetic center, as the earth or any other planet, would instantly change the rate of the environment of the planet magnet to a grade of intensity that would give light and heat. In this manner light, heat and greater vital force was born upon the earth, when its dark clouds lifted and its atmosphere became

translucent, so that the sun's electric currents could affect the earth through electric transfer. Thus the influx of external light upon planetary life was positive and marvelous, introducing a new power upon the forming organic life in the vegetable and animal world, and working great changes in all organic structures. And in response to this new power the eye began to form and a new and distinct organ of sense was perfected. It was slowly developed at first, for the light radiated from the sun penetrated the mists of earth dimly, for it was almost midnight gloom in some sections and dusky twilight in others.

So far I have said nothing of excessive heat, for the earth began in excessive cold. But as the earth magnet or dynamo increased its electric power it increased its heat.

We now come to the dawn of instinct or rationality in the primitive types of life. There we find a basis for the first principles of instinct or animal rationality in the balancing of one sense by the exercise of another, and the combined results of the two. Seeing and feeling gave a higher type of brain power, and raised that organ to a higher grade of perception and a newer type of intelligence.

Then another faculty added its powers to the sense of sight and feeling, for the atmosphere in which the reptilian tribes were living half the time or more were sending out sound waves which touched the nervous filaments of the central battery of the brain, and as the eye had formed to respond to the waves of ether caused by the electric currents of the sun, so a new organ began its formation in response to the incoming waves of power the atmosphere

brought to the brain-cells, and the ear began to gather in concentric circles around the brain-center, and a new sense—that of hearing—was formed. Thus there was an additional increase of the power of perception or instinct. Thus were evolved all types of animal form and animal instinct. They were the result of electric energy, sense perception, and long ages of growth, comparison and environment.

Then came man, the highest type of animal organism. Man may have passed the successive changes and transmutations of form that the shifting vibratory rates of the planet responded to in the long period of world building. He may have attained to the grade of animal activity as a mind of the highest order in bodily form before he received the spiritual powers and intellectual force which he has exhibited all along the ages, after all animal forms had battled with the elements in the struggles to keep in equilibrium between the surging tides of electrical dispersion and magnetic concentration. Certain it is man holds his own by virtue of his steady rise in mental power which has no limit of evolution in the present stage of physical life and psychic life. And there are no known boundaries of his power to penetrate all mysteries and explore all conditions of existence "wherever being has laid foundations, or law is working out the problems of infinite destiny." Man came as a spiritual creation.

Many scientists discard the religious or Mosaic concept of a special creation of man and a divine revelation, and hold that the revelations of science are the only revelations of God that the world can regard as reliable.

I cannot agree with them that man was evolved

from the animal creation. I hold he was a special creation, as Moses says he was; but that special creation was not his body—that may have been evolved from the lowest forms of animal life through many ages, and is no part of the real man. It was woven by electric law and energy as an overcoat of atoms for his earthly habitation. Man's body is not man, but the house in which he lives for a time, the earthly temple of the soul. Moses affirms this when he says "God breathed into man the breath of life, and man became a living soul." It is the breath of God, the atom of Deity, the living soul that constitutes man, and that was a special creation. This I have discussed at length in "Invisible Light." I hold no law of evolution could bridge the gulf between man and the animal creation. The fixity of brute instinct, and the boundless expansion of mental and psychic force in man forbid such a conclusion and confirm Moses, who says he was made lord over the earth and all animal creations. Man has three bodies—a spiritual, an electric and a physical body. Animals have only two—an electric and physical body. And both the electric and physical bodies of men and animals came from the same source and are governed by the same laws. Animal instinct is not spirit, is not a part of Deity, it cannot dream of God or heaven, or comprehend the universe or weigh suns and worlds.

It knows only the electric impulses of the material senses and reasons from these alone, and, by balancing one sense by another, attains an experience which in time becomes an automatic habit or force of nature under the law of its electric organism. It feels all sensations, like hunger, passion or fear, as

an electric impulse on the sensitive tissues of the brain and responds from natural habit. It does not think, reason or soar into the boundless fields of ideality. It cannot feel the spiritual touch of human souls, or the divine impulse of God and love, of music, poetry, language, art and religion, as does the human soul.

Man is as much above the animal creation as the animal is above the vegetable and the vegetable above the mineral.

We have seen that the mineral is created by aggregations of atoms solidified under the law of magnetic attraction and brought to rest by balanced forces into crystalline form, and thus incorporated into the foundation elements of the earth magnet. They are simply electric and atomic forces and atoms balanced and at rest. They have no organic existence. Vegetable life, which is next above them, have organisms, and are sun engines breathing in nitrogen and giving out carbonic acid or oxygen to sustain animal life. The vegetable organism furnishes food for all animal life.

There can be no evolution of plant life into animal life. It is not scientific to search for such an irrational order of development. Vegetable, plant and tree in their organic life structure, never become animals. They have no independent existence separate from the sun's rays and the earth's soil except as latent in seed life. Cut off the sun currents from their leaves and the electric earth currents from their roots, and they are at once weakened and destroyed.

Animals are a higher order of life which have an independent existence in atmosphere and water—electric elements—separate from earth dust, and

which evolve and give forth in their own organism the electric instinct and impulse which controls their own actions and habits.

They have no psychic or intellectual force, and can never be evolved into human souls or organisms. Man is as far above the animal creation as the heavens are above the earth. He is not the descendant of a monkey or any other animal creature except possibly in his bodily organism. He is a soul and belongs to the Spiritual Kingdom of God.

The scientists say there are three kingdoms in nature—mineral, vegetable and animal. I say there are four—mineral, vegetable, animal and man, or the spiritual Kingdom of God. Man is a soul or spiritual body which is from God and a part of God. He can think, reason, aspire, analyze, and soar into the psychic realms of the spiritual world and commune with angels and Deity, and is a spirit monarch of the universe.

And his longing, heaven-bound nature cries out to Deity: "Thou hast made us for thyself, and our souls are restless till we rest in thee!"

The vegetable has the elements of the mineral, with a material organism added; the animal has the elements of the mineral and vegetable with a material organism and an electric body and instinct added. The animal may possibly live hereafter in his electric body or secondary form. Man has the elements of the mineral and vegetable, the material body and the electric body of the animal, and added to all these he has a psychic or spiritual body, which links him to Deity, and makes him the epitome of all creation, the child of God and the universe, and the sovereign of eternal life, love and destiny.

The recent discovery of a man's skull at Lansing, Kansas, found sixty feet below the earth's surface, under many stratas of rock formation in the ooze at the bottom of a sea that existed in the glacial period, shows a cranial or brain development equal to the average man of the present day. This skull, estimated by scientists to be from thirty to forty thousand years old, with such a splendid head formation, shows conclusively that man was never evolved from the animal creation, but is a separate and superior being above the animal, and lord over all the animal creation.

This Lansing skull is one of the greatest discoveries of the age and confirms man's high lineage and ancient residence on this revolving planet, and supports Moses and the Bible.

Also the recent discoveries in the ruins of Ninevah, Babylon, Nipur, and other ancient cities of Asia Minor, and also in Egypt, reveal written leases and other documents eight thousand years old, which show that man has possessed superior knowledge and intelligence from the earliest periods of the world's history, and tend to support the biblical theory that man was a special creation, and not an evolution in his psychic nature from the lower animals.

Man and human history, while complicating, does not alter the real force and nature of evolution. While it is said "the history of the world is the biography of great men," yet if Alexander, Cæsar, Napoleon, Frederick the Great, William the Conqueror and other great men were eliminated, it would have had little effect in disturbing the steady onward course of the world's development.

Great men are the images, symbols and instruments taken at random by the constant and mighty forces of their age and times which stood behind them and swept them onward in their great careers. They were the pens of Fate used in her writing, the weather vanes of destiny which turned the way the currents and tides of invisible forces were blowing.

Humanity of the past and present is not final but progressive. Man's marvelous discoveries in science, his aesthetic culture and spiritual growth makes the future of the race the most persistently fascinating question of the age.

Man is not a mere animal, but is one with Deity, and a part of that unseen spiritual power which directs the stars in their infinite courses, gives electric brilliancy to the all-dazzling sun, paints the dawn and the aurora, colors the gorgeous wings of the butterfly, and guides insensate matter to do the will of Omnipotence.

CHAPTER V

MAN IS A SOUL CLAD IN AIR. A SPIRIT IN AN ELECTRIC ORGANISM

My claim that man is an electric organism is confirmed by Professor Loeb and Dr. Mathews in their recent experiments at the Chicago University.

"Electrical charges in the atoms of the bodily tissue are responsible for all the active phenomena of life. In other words, electricity is the basis of life." This is the sweeping conclusion with which Dr. Jacques Loeb amazed the physiologists gathered in their last annual meeting at the Chicago University.

Hitherto it has been taken for granted by men of science that the food we eat nourishes us by furnishing the tissues and muscles of the body with thermo or heat energy. This, according to Professor Loeb, is totally wrong. Instead of the food furnishing the muscle with heat energy, it supplies electrical energy, which, after being converted into mechanical energy, is responsible for all the muscular contractions and organic processes of living organisms.

He has arrived at this conclusion after many years of intricate and difficult experiments along the line of reproduction of animals, of determining the effect of salt on the heart-beat and its rymthic motion, and on other muscles, and of the destructive

processes at work in the eggs of simple unicellar animals. They have been the means of determining the answer to the one great question, "What is life?" and he regards all his previous discoveries subsidiary to this one. He received his first hint of this new theory of life through the fact that electricity is able to affect protoplasm in a more universal and effective way than any other form of stimulus. And he drew the inference that if electricity is able to affect protoplasm in the form of currents, it ought to do so in the form of ions, which is an electrically charged atom or group of atoms.

In experimenting to determine the toxic and antitoxic of ions on protoplasm, which is the basic substance of all physical life, he discovered that any one salt will act as a poison on the eggs of a sea urchin, but by adding one or more, or certain other salts, he found it was able to counteract the effects of this toxic effect. From which he concluded that the toxic and antitoxic effect of the salts were due to the manner in which its atoms are electrically charged.

He found that when a salt whose atoms are positively charged come in contact with the eggs of the sea urchin, they interfered with the life processes, while salts whose atoms were negatively charged stimulate contraction; and the presence of both positively and negatively charged atoms were necessary, and the phenomena of life is due to the play between the different charges of electricity in the molecules. The energy of foodstuffs and motions of the heart and other muscles of the body are not due to the production of heat, but

to the chemical energy in electrically charged moleulces.

He says: "A part of the chemical energy of foodstuffs is transformed into electric energy, which gives energy to the body. In one experiment I put a jelly-fish in contact with a solution of electrically charged substances, and it immediately responded by muscular contraction. I then put it in a substance that was a non-conductor and there was no response. In this way I concluded it was the electric charges which effected the muscular contraction, that a pure salt always acts as a poison to the egg, and in order not to have toxic effects it is necessary that the positive and negative electric charges should easily balance. A muscle is stimulated by electro-negatively charged particles, and prevented from contracting by electro-positively charged particles.

"I have experimented with eggs of different low forms of animal life, with single protoplasmic cells, and with muscles. Professor Mathews has shown that my results hold true for nerves. I took the eggs of the fundulus and found that after they were fertilized they will develop in sea water.

"In a sodium-chloride solution I found they will not develop, but by adding a trace of calcium as many eggs will develop as in the sea water. This is due to the electrically charged atoms of the calcium. Artificial parthenogenesis, or life artificially produced, has been of interest only as it leads me to learn how the electric charges of ions affect life phenomena. You can bring about parthenogenesis only by positive ions. I have come to two conclusions: First, rythmical contraction occurs

only in the presence of electrically charged subtances. Second, the efficiency of the charges depends upon the number of the charges or the different ions. Professor Mathews has arrived at a third conclusion, which is, that the negatively charged ions are those which stimulate, and the positively charged ions are those which hinder contraction."

Dr. Loeb's paper created a sensation among the assembled scientists, as also did that of Professor A. P. Mathews, on "The Nature of the Nerve Stimulation and Alteration of Irritability." "Dr. Loeb's discoveries have revolutionized the basic principles of physiology," declared one of the scientists. "A greater part of the text-books on this subject will have to be rewritten to accord with the results of these new views of life phenomena." And Dr. G. N. Stewart, who presided at the meeting, eulogized Dr. Loeb and said, "He has given us an insight into the mechanics of living tissue which we never before have had. He has brought forward the science of electro-physiology, which has hitherto been despised, but which will now be accorded a respectable position."

Professor Garrett P. Serviss says: "This discovery of Dr. Loeb and Prof. Mathews comes closer to the solution of the mystery of life than physiologists have ever before been able to approach, and is so fundamental and far reaching as to warrant the hope that we shall soon know what are the conditions and the limits of man's power to prolong his own life.

"The whole foundation of physiology and medicine may be reconstructed, and we may find that we possess a control over the phenomena of life

more masterful than anybody has yet dared to dream. Briefly, it has been discovered that our nerves consist of what is called a colloidal solution—that is, matter resembling gelatin held in solution in water before it is jellied, and these colloidal particles in the nerves carry charges of positive electricity. When the nerve particles pass from the colloidal condition into the state of gelation, or become jellied, the nerve experiences a stimulation or becomes active. This is produced by the action of atoms or ions bearing charges of negative electricity.

"This explains the action of certain chemical substances when introduced into the human body, some of which tend to quiet the nerves and others to excite them. The nerve-quieting ions are those that bear charges of positive electricity, such as atoms of sodium, potassium, calcium and hydrogen, and tend to keep the colloidal particles of the nerves in a state of solution, so that the nerves remain inactive. The nerve-stimulating ions are atoms of such substances as fluorine and chlorine, which carry charges of negative electricity and cause the nerve particles to coalesce or become jellied, in which condition the nerve is active, the degree of activity depending upon the intensity of the stimulation. Death appears to be the result of the stagnation of the nerves, and this discovery may enable us to oppose the process that ends in death."

This throws a flood of light on other obscure problems, and offers an explanation of the effect of anaesthetics upon the human body. Anything that tends to keep the nerve particles in a state of solution quiets the nerves. Now, nerve particles are largely composed of fat, and anaesthetics dissolve

fat. Hence anaesthetics produce the effect of positively electrified ions, preventing the nerve particles from coalescing and thus quiets the nerves. The action of whiskey in arresting the progress of snake poison is explained. The alcohol counteracts the coagulating tendency and keeps the nerves in a colloidal condition. It explains many other familiar facts, as why heat tends to quiet the nerves, and that chemical stimulation is identical with electrical stimulation, and solves the long standing puzzle of muscular contractility.

Dr. H. Preston Pratt, an eminent electro-therapeutic expert, says: "Dr. Loeb's experiments have demonstrated that *electricity is life*—that the entire human organism is controlled by electrical forces. The twentieth century will prove electricity and not salt is the real life-giving principle.

"If this force is taken away, life ends, and, in the same manner, if this force is supplied the result is the immediate stimulation of the organic life.

"The necessary elements of life are taken into the body through the air and food, and the entrance of the essential elements into the blood sets the human battery into operation, and it continues to operate as long as the electrical forces are supplied to the blood. *The human body is of elements the same as a magnet and is built of smaller magnets or molecules.*" This I have contended for many years. He continued: "To show the connection between human life and electricity, take an ordinary battery of chloride of ammonia or salammoniac and study its workings. You will see that by the introduction of the element zinc the electrical current is found. The zinc is of positive polarity

and so is the ammonia, while the chloride is electro-negative.

"The electro-positive zinc has greater electric affinity for the chlorine than the ammonia has, and consequently the ammonia is driven off and combined with chlorine, forming chloride of zinc. The result is the difference of an electric pull between the elements.

"All admit that the force of elements forms a part of the anatomic structure, and there must be electricity. When oxygen is taken into a body it excites the elements in the same manner as the negative chlorine attacks the zinc in the battery. The electrical circuit of the body is the circulating blood, and when the oxygen and the nitrogen are taken in through the lungs the electro-negative ions go in one direction. Sulphur and oxygen are electro-negative and the other elements of the blood are electro-positive; and consequently, when the nitrogen and oxygen of the air attack the blood through the medium of the air cells, we find that oxygen and sulphur pass in one direction, while the other elements which are electro-positive pass in the opposite direction. This action is electrolytic the same as if we apply a battery to the human body."

All this accords with my theory of electrical creation, and proves, as I have contended for many years, that man's body as well as the universe is an electric organism.

In my book "The New Cosmogony," published about five years previous to these discoveries, I laid down the broad proposition that nature or the Creator has never made but one pattern or type

of a thing that exists, and that is the electro-magnetic. That suns and worlds, man and all animal and vegetable organisms, are electro-magnets. That electricity was physical life, and digestion and assimilation of food were purely electrical processes; while the five senses—seeing, hearing, tasting, smelling and feeling—were all electrical manifestations, seeing and hearing being a form of wireless telegraphy.

That the electric combination of positive and negative atoms weaves the visible structure that envelops the soul. The electric elements from the lungs and stomach enter into the blood, and set the human battery in organic operation and create and continue human life. Thus the beginning of life is an electric process, and the source of life is augmented and continued by absorbing electric energy from the air we breath, from the food we eat and water we drink, and not by the so-called thermal or heat digestive process, but in the same way as we extract electricity from coal and wood —by a species of electric transformation or combustion, like feeding a flame from the oxygen of the atmosphere.

The body is not only an electric machine or organism, but the exercise of every function is an electric process. And the derangement of any function, which we call sickness or disease, is an electric derangement. Prof. Loeb and Dr. Mathews have shown how the body is woven of positive and negative atoms.

Prof. Lucian I. Blake, of the Kansas University, in his lecture, "Atoms and Their Electric Charges," shows how medicine affects the human body and

how life could be started in an unfertilized egg by inserting an electric current. This was done by placing the white of the egg in a vessel containing salt, calcium and water, and turning an electric current into it. Life in this way can be raised to the fourth stage, he says.

Another interesting experiment was a comparison of the effect of electrical charges on the ferments of human blood, yeast, plant and platinum. The ferments mixed with water were placed in separate vessels, when the ions of each began to move about, causing bubbles to go to the top of the vessels. Ether was placed in the different vessels, and then a few drops of hydrocyanic acid, a deadly poison, were added. The ether, by having an opposite electrical effect to that of the acid, neutralized its effect.

So, in the case of all poisons, if it be known whether the electrical effect is negative or positive to that of the blood ions, an ion producing an opposite electrical effect will counteract the poison. Prof. Blake says: "The reason ether prevents the pain of operations is because it stops the coagulation of the nerves. All atoms of matter are charged with electricity. All vital actions are always connected with electricity. All drug effects are brought about by electrical charges made with the meetings of the ions in the blood and those in the medicine."

How strongly does Prof. Blake sustain my theory when he says, "All atoms of matter are charged with electricity. All vital actions are always connected with electricity." He also shows how medicines affect the human body, how antidotes neutralize poison, why stimulants arouse electrical energy, and how narcotics stupify and deaden it.

Electricity, I contend, is the active, energetic and all-pervading ultimate force in nature, controlled by the still more refined and ultimate spiritual force. It is the medium and ever-active agent in evoking all visible forms and substances; the medium which produces all affinities and repulsions in matter, gyrating from the lowest to the highest elements and from globe to globe, and constitutes the invisible controlling element whose results are known as laws. Electricity is the guardian and executive of the invisible laws of nature. It is the suspension bridge spanning the darkness and chaos of space between suns and worlds.

Man is the product of the perfect unfolding of nature's invisible electric laws, and aggregate atomic elements; and unites within himself all the elements and forces of the combined and harmonious universe. He is an epitome of the universe and an atom of deity. His form, like all visible forms, is only the temporal combination of material substances woven by invisible electric force out of invisible ether. The thoughts of man's mind are the governing force of his organism. The thoughts of the Great Creative Mind constitute the laws of nature and the controlling force in the electric organism of the universe. Man is a Soul clad in air.

The results of these thoughts of deity are the vast expanse of the universe and varied forms of animate and inanimate nature; just as the result of man's thoughts are the varied structures, temples and works of art, constructed by him upon the surface of the earth. All things man creates are the representatives of his thought, the outward expression of his soul. He creates nothing but what

is a living evidence of his previous thought or concept. All things tangible are the living evidence of a soul—the invisible soul or spirit of deity and man. All material things are the forms of God's thoughts or man's thoughts, which is the interior cause, producing tangible effects. For the natural world is the spiritual unfoldment made manifest in matter by electric energy. But I must not consume space by a repetition of these things. What the world wants is the truth, and we are discovering it at a very rapid rate. And if these theories are not the truth they are nearer to it than nine-tenths of the accepted truths of science.

The ancients knew little about their bodies, or the mysterious operations of physical life. They looked only at effects and the outside of things, and knew nothing of the invisible forces of nature. They regarded all the mysteries they could not understand as supernatural, as outside of nature, and produced by demons, wizards, necromancers, or their imaginary gods.

Their knowledge of their bodies was as limited as their knowledge of the universe, which they regarded as a little span of flat earth and bending sky; and they relied on incantations and prayers to restore the sick, and on the flight of birds and the entrails of beasts to reveal the mysteries of the future. They believed in obsession and deemed all sick, insane and diseased persons as possessed of demon spirits or devils, and their restoration to health or their right minds was called "the casting out of devils."

The ancients also believed every evil propensity was the prompting of some demon spirit that pos-

sessed the human body, and that there was as many devils as there were evil propensities. Mary Magdalene was possessed of seven devils, and the man who had more evil propensities than they could enumerate was said to possess a "legion of devils."

But the world is fast outgrowing the ignorance and superstition of the past and this is a fortunate and happy age in which to live. This is preeminently the age of electricity—of mind and invisible forces—as the past century was an age of matter. The whole world is feeling the electric thrill of a new life. New voices call us, new inspirations are in the air, new thoughts crowd upon the thinking mind. The reasoning soul catches whispers from the stars and celestial benedictions from the radiance of the sun. Man is a heaven-bound spirit in an electric body woven of dust and air, of infinite ether and eternal atoms, sifted through boundless space, and tossed from suns to worlds; and he is climbing to loftier spiritual heights and a diviner atmosphere.

The great men of the past had false ideals. They were the ambitious conquerors, who despoiled their own race and deluged the world in blood. Their thrones were built on pyramids of human skulls swimming in a sea of human blood and tears. Their triumphal march was heralded by the clanking chains of miserable captives, and the wailing cries of widows and orphans. For many ages human slavery, grinding poverty and abject misery were the common heritage of the despoiled masses who lived in hovels, were made food for cannon, or were sold into bondage for debt, while a few fortunate

rulers reveled in luxury and swayed despotic power. Up to the recent centuries the chief vocations of men were the soldier and the priest—the one for slaughter and the other to appease the gods.

But the evolving ages have changed the ideals of the world, and liberty and justice are no longer a dream; but "Peace hath her victories no less renowned than war." The time is near at hand when the ideals of men will be so exalted and their consciences so alive to the demands of love and justice that no man of wealth can sleep in his luxurious home or feast on choice viands and know of any human creature or dumb animal suffering from cold and want without first ministering to their needs. This is the law of love written in every enlightened heart, as it is written in the books of the New Testament.

Men are beginning to learn that the greatest thing in this world is not wealth, with its pomp and pride, though it may bring a thousand comforts. It is not religion, with its glorious dreams crowned with the promised beatitudes of heaven, though martyred saints and prophets have given their lives to confirm its faith and hopes. It is not literature, with its gems of thought and flowers of divine fancy, which have charmed and inspired mankind from the days of Homer to those of Shakespeare and Tennyson. It is not science, with "learning's ample page," though she has transformed the earth, and produced a Gallileo and a Newton. It is not the wonders of mechanical genius, though we stand in awe before their marvels of grandeur and utility. It is not the beauty of inspiring art that lifts us to the altitudes of aes-

thetic joy. These are but the ideals and manifestations of that which is higher and greater, which is written in the soul of man as in a book.

Man is the greatest thing in this world—ah ! in the universe next to Deity. He is the offspring of Omnipotence, the Child of the Sun, the inheritor of the universe. All suns and worlds, all life and space are the playgrounds of his activities. He shall dwell in the home of Deity, stroll in the garden of the gods, bask in the radiance of central suns, recline on the daffodil meadows and wander in the elysian fields of paradise. He is at home in the measureless expanse of all ether and space.

Wherever an atom vibrates or an electric current thrills, there he is the monarch of spiritual power, and can command the electric force that tosses suns upon their course and plays football with the stars. Man is no worm of the dust, he is the darling of the skies, the ruler of suns, the cherubim of celestial destiny clad in terrestrial ether and winged with the spiritual power of Omnipotence.

> Who nobly does must nobly think,
> The soul that soars can never sink,
> And man's a strange connecting link
> Between frail dust and Deity.

CHAPTER VI

ELECTRICAL DERANGEMENT OF THE BODILY ORGANISM PRODUCES SICKNESS AND DEATH

I CONTEND that man's body is an electric machine or organism, and electricity is its vital force and governing power, and all sickness is caused by the electrical derangement of the bodily organism. Electricity is the force which organized the body machine, which runs the body machine, and whose loss or deficiency cripples and finally destroys it.

Sickness is the impairment of some of the parts or functions of the body by reason of its failure to get its necessary and natural supply of electrical energy. This may be caused by an injury to some of its parts or by lack of proper air, food and nutrition containing the electric properties required. For air is an electric element from the life-giving sun, and vegetable food is the embalmed rays of the sun, and animal food is vegetable food embalmed in animal organism and brought one step nearer to electrical digestion, and both air and nutriment are necessary to supply vital electricity to the living organism. And while man can live without food forty days, he cannot live without air four minutes. The great force and power which run the human or animal machine is the vitalizing air we breathe, the electric atmosphere in which "we live, move and have our being." It is as much

a substance as the water in which the fish swim, though it is transparent to light, while water is only partially so.

The lungs are the great electric reservoirs of the body and take the electric current of the sun from the atmosphere as constantly and naturally as the electric wire takes the current from the battery or the dynamo.

Then it imparts electric energy to the blood and sends it as an electric current and fluid coursing through every part of the body, producing vitalizing life and growth, causing the heart valves to beat and pump with marvelous power, the pulse to throb, and the whole machine to pulsate, thrill and whir with electric life and energy.

Flammarion says three-fourths of a man's life energy and nourishment comes from the air. And Nicola Tesla says the time may come when man may learn to live on air alone, as do some kinds of vegetable and animal organisms. Man in time may learn to so mix the elements of the atmosphere to supply the needs of the body, that he may, by breathing it into his lungs, obtain all the essential elements to preserve its life and organism.

The oxygen of the air keeps alive the fire of physical life, and the body may be compared to a flame fed unceasingly by electric fire from the sun and atmosphere, according to the laws of electric combustion. The want of oxygen or this electric energy from the air extinguishes the flame of life as it extinguishes the flame of a lamp.

The blood could not course through the veins with such marvelous speed if it were not for the electric energy imparted to it in the electric reser-

voir of the lungs; the heart valves could not throb with such wonderful force or the pulse keep its steady, unceasing beat but for the electric power imparted by the wireless electricity of the air.

Besides, the electricity of the air passes through and through the pores of the body at every point, giving additional life and force, and every angle of the body draws electricity like the point of a lightning rod, and the legs, the arms, the toes and the fingers with the space between them, constitute horseshoe magnets of great efficiency.

A man's strength and endurance is measured by the electric atmosphere he draws into his lungs and the fuel or food he takes into his stomach or boiler. A man's stomach bears a similar relation to the body that the boiler and furnace does to the machine, and should be treated in very much the same way. It should receive only the fuel necessary to its usefulness, and the ashes and debris should be cleaned out every morning before building a fresh fire, as is done with every well kept furnace. The lungs take in pure electricity from the air, while the stomach takes in compound electric elements, vegetable and animal, and converts them by the electric process of digestion and assimilation into blood and bone, nerves and tissue, and the two functions give vitality and growth to the whole body.

But the electric and controlling center of the bodily machine is the electric dynamo of the brain, to which is attached the spinal column with its nerve branches reaching out to all parts of the body, along which, as on connecting wires, the brain telegraphs its wish and will and governs the whole organism. Here the mind or soul dominates the

brain and the brain dynamo dominates and controls the body. Through all the vicissitudes of life, until the final dissolution of the body, the telegrams from the brain running along the wires of the nerves control the muscles, the movements and all the varied utilities of the body. In other words, the mind controls the electricity of the brain, and the electricity of the brain controls the body.

If you cut a nerve or obstruct the electric current, you cut off the electric control of the brain, and there is paralysis in the part of the body where the electric wires are disconnected. Consumption is a disease caused by a failure of the lungs to draw sufficient electricity from the air to supply the normal needs of the body. For lack of this electric energy the whole system becomes enfeebled and finally dissolved. Indigestion is a failure of the stomach to supply the necessary electric energy to assimilate the food. And all sickness, aches and pains are nature crying for electric energy necessary for her to fulfill her natural offices and functions.

Dr. Jacques Loeb, of the Chicago University, announced on February 22nd, 1903, that he had discovered that muscular and nervous diseases, such as St. Vitus' dance, paralysis, agitatus, locomotor ataxia and sleeplessness, can be cured by administering calcium salts because of their electrical effects.

He says the presence of calcium salts in the muscles prevents their twitching; that practically all nervous disease are caused by the absence of the calcium, and "therefore to restore normal conditions and effect a cure a dose of calcium salts should

be administered for its *electrical* effects upon the parts affected."

In recent years many persons have been restored to health and strength by the direct use of electric currents, and many diseases have been cured by electric appliances

The necessity for an ample supply of electricity, both positive and negative, to sustain and preserve the life of the bodily machine is now acknowledged by all thinking scientists.

We have seen how different kinds of medicine, by furnishing the positive or negative molecules needed by the body, restore the natural equilibrium and preserve life and health, and how the failure to obtain these needed electrical supplies of life-giving energy, either by food or medicine, results in disease and death. We have seen how toxic and varied poisons have their antidotes in opposite electrical elements and molecules, and how stimulants excite and opiates quiet the electric energy of the body, and it is unnecessary to dwell longer on this subject. The fact that all sickness and death is caused by the electrical derangement of the body I think is now so clearly proven and so generally accepted, that detail and extended argument is unnecessary.

To show that electricity builds up the body. Even at this late period in the world's history there are instances of nature returning to her primitive electric crystalline process even to the extent of converting man's body into stone. Four recent cases are reported in the medical records of man's flesh gradually turning to stone. One case is reported from North Judson, Indiana, where Eli Green is turning to stone. His muscles, skin and flesh are gradually

becoming as hard as the bones of his framework. To the touch he is dead. Only the feeble action of heart, lungs and stomach and a fertile and active mind give evidence that there is any life in him whatever.

The physicians declare he is afflicted with a disease that runs its course in seven years; not a day more or less. Green has already dragged out his existence over four of these years; only three of his short span of life remain.

There is a similar case reported of Miss Stella Ewing, the ossified woman of Rome, New York, and one from Sydney, Australia, where Jacques Moritz was afflicted with the same terrible malady. Eight years ago Moritz was seized with sickness that baffled every effort by the physicians to relieve it. From the patient's feet a numbness began to creep upward. That was the first sign of the disease. The numbness steadily ascended, and seven years from the day the malady first displayed itself the sickness had eaten its way into the patient's brain and had hardened it into stone exactly as it had hardened the muscles, flesh and skin of his body. Then death relieved the sufferer. There are several recent cases of a similar kind just reported in the newspapers.

This shows how easily nature can go back to her primitive electric process and in the crystalline formations resume her first step in world building. And humanity is not entirely free from an occasional freak of nature in thus returning to her first processes of electric growth.

Electricity teaches there is no death or need of a resurrection. That which lived never dies.

Electricity demonstrates the resurrection not of

the physical body, but rather the continued existence of the real body, which is the electrical and spiritual body. Electricity proves there is no death. I believe man has three bodies—first, the physical body, or organic aggregation of atoms; second, the invisible electric body, which weaves and organizes the atomic body, sometimes called the astral body; and third, the real man, the spiritual body or soul, which controls the atomic body by means of the electric body. These constitute one perfect organism, and in normal health and condition it is under the almost perfect control of the mind or spiritual body, which sends forth its behest through the electric energy of the brain, which is the seat of power having charge of the electric and atomic body.

Death is the separation of the physical and spiritual bodies. The physical body goes into the grave and dissolves back into its natural elements. It fertilizes the soil and appears again in grass and tree and shrub, and the cattle eat it, and men eat the cattle, and its molecules enter again into other bodies.

But there is no resurrection for the physical body; it never comes out of the grave in organic form. The spiritual and electric bodies never die, never go into the grave. This is the true resurrection—the life everlasting. It is the invisible and secondary form which does not die, cannot die, and when once formed is as eternal as the stars.

The spiritual body and the electric form which surrounds it are incorruptible and start on their journey of endless existence together, never to be separated or destroyed.

Matter in its elemental form is invisible and eternal; electricity and spirit are invisible and eternal. Thus when the real man throws off his overcoat of atoms and steps out of this "mortal coil," he is free from the limitations of matter and can command the electric energy to go where destiny points and draws him, which is to the electric and spiritual center of our planetary system, the self-luminous and perfected world, the all-life-giving sun.

The oxygen of the air keeps alive the fire of physical life, and the body may be compared to a flame being fed unceasingly according to the laws of combustion. A want of oxygen extinguishes the flame of life as it extinguishes the flame of a lamp.

It is said a human being dies every second. In ten thousand years, two hundred thousand millions of human bodies have been formed by means of respiration and alimentation from the earth and atmosphere, and have returned to them again. They have enriched the earth and entered again into atmospheric circulation.

The earth is to-day formed in part of the myriads of brains which have thought and organisms which have lived. We walk over our ancestors as those who come after us will walk over us. It would be difficult to take a step upon the planet without walking over the remains of the dead, or to eat or drink without reabsorbing what has been eaten and drank a thousand times before, or to breathe without using the same air already many times used by the dead.

But this is not all there is of humanity. All the souls that have lived still exist. Souls are the seed of terrestrial population. We have no reason to

affirm that man is formed solely of material atoms and that the faculty of thinking is only a property of his organization. This is the mistake of the one-sided physicist. When we analyze matter we find everywhere the invisible atom. Matter disappears like smoke in the atmosphere.

Our bodies at death gradually disappear in the same way. If our eyes had power to see the reality of things they would look through walls formed of separate molecules, through seemingly solid bodies, which are atomic vortices. It is with the eye of the spirit that we must see. We cannot trust to the sole testimony of our senses. There are as many stars above our head in the daytime as at night.

Nature knows neither astronomy, physics nor chemistry; these are subjective methods of study. All things are one—the infinitely great and the infinitely small. Stars and atoms are as one.

"To speak with exactness," says Flammarion, "solidity does not exist. A heavy ball of iron is composed of atoms which do not touch each other; its apparent solidity is pure illusion. In scientific analysis it is a cloud of gnats like those that hover in the air at twilight. Heat this ball which seems so solid and it will flow like water; heat it still more, it will evaporate into invisible space without changing its nature. It will always continue to be iron. In a house, its walls, floors, carpets and furniture are composed of molecules which do not touch each other. And these molecules which constitute all matter revolve around each other."

It is the same thing with our bodies. They are composed of molecules perpetually rotating around each other, like a flame, constantly consuming and

constantly renewing itself. It is like a river on whose banks we sit and fancy we see the same water flowing past, but the current renews each drop perpetually.

Each globule of our blood is a miniature world, and we have five million in the fraction of a cubic inch, flowing incessantly through our arteries, flesh and brain, rushing in a vortex of life, as rapid relatively as that of the celestial bodies, and continually renewing the molecules of our heart, brain, eyes, nerves and flesh, and every atom of our bodily organism. And this so rapidly that in a few months our body is entirely reconstructed. Electricity, the right hand of Deity, does all this and sustains the earth, the sun and stars of the universe in infinite space. That which gives man his organism is not his material part; it is vital, invisible, electric force, and mental power. The body disintegrates all at once after death, as it disintegrates slowly, renewing itself perpetually, during life.

In the future there will be no fearful apprehension that the coal deposits of the world will be exhausted. The waters that now run to waste, the ever moving tides of the restless sea, the swift wings of the unused winds that sweep through the tides of the atmosphere will be harnessed to the car of human progress, and furnish all the energy needed to supply the vast activities of the world.

The concentrated heating power, latent in every sunbeam, and the combustible gases hidden in every drop of water will be supplemental sources of boundless energy for all ages on this wonderful magnetic planet. All sickness and ailments of the body are the result of the derangement of the electricity of the body, for which there is a remedy.

The art of longevity will be restored to the human race by supplying the electric energy necessary to maintain its growth and vigor, renew its wasted tissue and preserve its organic power. Then the age of Methuselah may come again in longevity, and the centenarian be in the boyhood of his race. Man will eat less, enjoy more, and get a thousand-fold more pleasure out of life, and be better prepared for his swift translation to the celestial cities of the sun.

In the future he may not eat eleven hundred meals per annum, but a few mouthfuls of concentrated food daily and an electric supply attachment adjusted to his body during sleeping hours may renew and rejuvenate his electric organism. It may be that in the future every residence will contain a chamber supplied with air and gases containing all the elements of the body so adjusted as to give it continual life and vigor by merely breathing in its life-giving elements a few hours each day. All these things are possible.

Then there will be light and refreshing work of a few hours daily—no real toil or labor—for the electric devices and pliable machinery, subject to the will of man and the electric button, will do the work of the world. Then the soul will be paramount and soar above the grosser appetites and passions to gather celestial joys in the spirit realm of earth's diviner life.

This is pre-eminently the age of mind and invisible forces, as the past century was the age of matter. Francis Grierson says: "So far as we know, electricity is the soul of form. What we call brain waves have an analogy to electric waves. We are

being ruled by the seemingly impossible, and the most successful inventors of the present day would have passed for madmen twenty years ago. The so-called dreamers are now the men of action who have proven their power and competence, and thinking people turn to them for more miracles of discovery and invention. The day is not far distant when science of the mind will treat material science as a plaything, and the psychic power of intellect will kill Mammon like the stroke of an electric bolt, and brute power will succumb to soul force. The thinkers of to-day are as far removed from the thinkers of 1870 as electricity is from steam. We know steam is a crude and clumsy thing compared with electricity, and to-morrow we shall awake to the fact that mind is just as superior to the crude electric current."

One of the strong desires of mankind is a long life with a cheerful, vigorous old age. This may be obtained by supplying the necessary electrical energy either in proper food, or by a direct supply of electricity. This will prevent the hardening of the cellular tissues which produces the decrepitude of old age, and help to bless and lengthen human life.

With the divine powers of mind and electricity working for man the millennium of a long life and happiness will soon arrive.

CHAPTER VII

ALL LIGHT, HEAT AND LIFE IS EVOLVED ONLY IN THE ATMOSPHERE OF SUNS AND PLANETS

I CONTEND there is no light, heat or physical life except in the magnetic atmosphere of suns and planets. That only in this marvelous electric belt which surrounds the earth, sun and planets is light, heat and life evolved, for there alone is it needed for animal and vegetable life.

There is neither light, heat nor physical life in space. Physical life cannot exist in the cold, dark ether of space, and without life, light and heat would be not only useless, but as both are sensations of physical organisms they could have no existence whatever. They only exist as sensations caused by electric currents passing either to or through organic bodies. Where those organic bodies do not exist light and heat do not exist, for nature does no useless, nugatory things.

No physical life can be evolved or exist, except in the electric atmosphere of suns and planets where the life-giving electric currents meet and exert their power, and then only by drawing that life as an electric current from the sun constantly into the lungs every minute. In this way only is life and growth generated and all physical organisms created and continued in existence.

Thus all life is preserved and renewed by drawing

the wireless electricity from the air just as the electric wire takes it from the dynamo. The vital portion of the air we draw into the electric reservoir of our lungs is simply our daily life drawn each day from the life-giving sun. This life and all that exist on earth or planets could not come from a burning globe or a molten sun. It is a superlative absurdity to think so.

Light, heat and life are the products of electric energy, which is only called into existence by the contact of positive and negative electricity in nature's chosen medium—the atmospheric environment of suns, planets and their satellites. This is nature's chosen theatre for animal and vegetable life. There is no reason or necessity for light, heat or animal and vegetable life elsewhere in the universe.

Here upon the surface of suns and planets are the mighty and varied currents of electric power and magnetic force, weaving forms and substance from invisible atoms and molecules, under the laws of electric attraction and organic affinity. In the economy of nature there are no wasted energies, or useless activities. Light, heat and physical life in space or transparent ether would be useless and nugatory; therefore nature ignores such folly in all her fruitful processes.

There may be reflected light, or a fluorescent glow, as in the tail of a comet or in the nebula of frigid space, but nothing we can truly call either heat or light can be evolved outside of the atmospheric sheet surrounding and penetrating the surface of suns, planets and satellites.

We walk on the surface of a revolving magnet and dynamo more perfect in measureless power and

efficiency than any man has ever invented or dreamed of, and it generates the power which makes light, heat and life in its own electric environment, where all things "live, move and have their being." It does not get light and heat from the sun; it gets electric currents with which it manufactures light and heat.

Prof. Richard Proctor says: "Profs. Bond and Zollner calculated that Jupiter sends forth more light than he receives from the sun," and he concludes that, "if this be true, Jupiter must be partially self-luminous and shines in part by his own light."

This sustains my position that there is no such thing as "borrowed light from the sun," any more than borrowed heat from the sun. There are currents of electricity from the sun which burst into light and heat on the earth and planets when they come in contact with their opposite electricity.

But each globe in space evolves its own light and heat in its own environing atmosphere. If Jupiter shines by its own light, then the earth and planets all shine by their own light, the sun furnishing the electric power to enable them to do so. I think our moon is no exception. It evolves the mild silvery light it displays in our midnight skies from its own attenuated atmosphere, but displays it, like the planets, only on the side exposed to the direct rays of the sun. The greater and denser parts of the moon's atmosphere is in the deep and numerous cavities of its torn and rugged volcanic surface. All planets and satellites shine by the light evolved in their own atmosphere.

I contend that no reliance can be placed in the

spectroscopic evidence of heat in the sun, or any distant globe. This ought to be apparent when all light and heat rays can only be translated into photography as a picture evolved in our own atmosphere. What we see are the electric colors in the atmosphere of a distant sun or planet.

The spectroscope simply photographs the colors of the elements in solution composing the atmosphere, just as we photograph the rich colors of a glowing sunset or a gorgeous rainbow. The evidence of the spectroscope as to heat has been greatly exaggerated and overestimated by the scientists, for it can give no evidence of heat. An astronomer standing on the moon and examining our gorgeous, glowing, crimson sunsets or aurora through a spectroscope would declare our earth was a blazing ball of fire. It would seem so to him, and he would have just as strong evidence as our astronomers have that the sun is hot or a ball of fire. Our astronomers look at the brilliant colors of the sun's aurora and make the same mistake.

All the astronomers admit the truth of Prof. Proctor's statement—that "the heat-giving power of a star is not proportional to the amount of light it emits." I ask why? And the answer is very plain: Because the stars and suns have no excessive heat and never had. Recent facts prove the sun is not hot. Prof. C. G. Abbott of the Smithsonian Institute, in his observations on the sun's eclipse on May 28th, 1900, says in his report: "My experiments showed the corona of the sun was actually cooler than the gray card which had been used at the room temperature."

What our astronomers have taken for fire and

evidences of heat is the rich and glowing rainbow colors of the outer atmosphere of the sun, produced by infinitesimal atoms of the different metals and substances of the sun floating in solution in its brilliant aurora, just as the elements of the earth float in solution in our gorgeous sunsets. The sun having a larger surplus of electricity than the earth is thereby enabled to extend its vast aurora from the equator to the poles, and this gives continuous, varied and beautiful light, with no darkness to its celestial inhabitants. But the earth, lacking a sufficient surplus of electricity to extend its aurora from the equator to the poles, must content itself by displaying its brilliant light and beauty near its poles, only occasionally extending it half way to the equator. The fact that the earth creates its own aurora shows it manufactures its own light. Every flash of lightning in our midnight sky, every blazing meteor in our atmosphere, prove the earth and planets evolve their own light and heat.

I agree with Prof. Proctor, when he says: "I adopt the principle of Sir William Herschell that analogy is the chief and the best guide for the student of astronomy. General resemblance of structure indicates a general resemblance in the purpose which the celestial bodies are intended to subserve." And I contend that all or nearly all suns and planets are alike in structure and in substance, and are vast inhabited worlds, governed by the same laws, controlled by the same electric energy, and possessing varied types of vegetable, animal and intellectual creations similar to our earth.

It is a universal law of nature that wherever

great electric power is conferred there are creations and results commensurate with that power.

Prof. Garrett P. Serviss, in the New York Journal, July 24th, 1901, predicted we would have four years of excessive heat on account of the dark spots on the sun, and many other scientists agreed with him. He said: "The earth is a satellite of a variable star. The source of terrible heat is directly in the sun and due to an extraordinary increase in its effective radiation. The periodic sunspot has thrown open the furnace door and sent forth the destroying blast which will continue for four years."

I undertook to answer him and contended that the sun is not variable in its heating power, and furnishes no more heating power to the earth at one time than another. That there is no increase in its effective radiation. That the sun does not furnish heat to the earth at all, and is not a thermal or heating engine as claimed by the scientists, but is an electric generator like the earth and does not need to be hot. That the sun furnishes the electric power and the earth heats itself. In other words, the sun furnishes powerful currents of electricity which come in contact with the earth's opposite electricity and the resistance of its atmosphere, and which are converted into light, heat and vital force down near the earth's surface.

The electric power furnished by the sun does not vary, but is measured by the attracting power of the earth as a vast magnet. Therefore all excess of heat is due to local causes and the uneven distribution of the sun's electric current on the earth's surface. This unequal distribution of sun currents,

causing excessive heat in the west, was produced by light rainfall during the previous year, and the harvesting of large areas in Kansas, Missouri and adjacent territories, thus exposing a dry soil and preventing the accumulation of moisture necessary to form clouds. The succeeding summers justified my position and refuted the predictions of the learned professor and other scientists.

In mentioning these things I mean no disparagement to Prof. Serviss, whom I hold in high esteem, and only find fault with the old traditions which he upholds.

I am a friend to all scientists and regard them as earnest workers seeking the truth. But they follow accepted and antiquated authority too closely, and thus "the blind lead the blind." They are too often one-sided and impracticable. Men who study apes and beetles or atoms and gases all their lives are no judges of angel's faces or of the scope and design of the universe. Prof. Proctor's testimony that "nine-tenths of the astronomers employ their powers in making observations at great pains and labor which are not worth the paper on which they are recorded," is a plain statement of their tendency to be cranky and impracticable.

Some are so one-sided they think mathematics is everything. Mathematics in its place, like the miser, is good to count gains after they are acquired; but had man relied on mathematics he would have remained as ignorant of the fundamental truths of the universe as the Blackfoot Indians. Newton owed none of his discoveries to mathematics. When his constructive imagination formulated a theory he tried to bolster it up with mathematics. But

it generally proved as delusive as did his calculation that the sun was 1,669,300 degrees hot.

The great boast of the mathematicians is that Le Verrier calculated where Neptune was before it was discovered by Galle at Berlin, but the fact is he missed it eight astronomical units or over seven hundred millions of miles, and said Neptune was not the planet he was looking for.

These are two average tests of mathematical calculations, and they are on a par with the miscalculations of how much the sun must burn up annually under the so-called laws of gravity to supply the necessary heat to the earth and planets.

Imagination—constructive ideality—is the highest gift of Deity to man, and the only faculty that can reason from the known to the unknown and comprehend the wonders and grandeur of the universe.

I am not a practical chemist seeking the mysteries of nature in the laboratory, nor a professional scientist exploring the fields of original research; but, like La Place, Comte, Herbert Spencer and others, I formulate my theories and scientific hypotheses from the latest and best established facts of science as I see it. Science is only unified or systematic knowledge. Every fact is a scientific fact, and every truth is a scientific truth whether it pertains to so-called science or to religion or philosophy. Nature has no subdivisions of science, religion or philosophy, nor astronomy, chemistry or geology; but all things are a unity, constituting one harmonious universe; and he who separates science from religion or either from philosophy goes contrary to nature and divides the universe into fractions. As I am not a member of any scientific

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or religious association, I have no prejudices to overcome and seek the truth only, without fear, favor or undue predilections. Old traditions, fossilized theories and antiquated authority have little weight in my mind by the side of recent facts. But I am not an iconoclast, for I am more anxious to build up than to tear down.

The professional scientists may deem such students of nature as myself who trespass upon their chosen domain as amateurs. If so, it is a proud distinction. Amateurs have accomplished nearly all the great things in the world's history. Cromwell was a farmer, Hastings and Clive were clerks, Bismarck twice failed in his examination to become a lawyer, Washington was a surveyor and Franklin a printer, Herschell was a musician, Faraday a bookbinder, Scott a lawyer's clerk, Arkwright, the inventor of the spinning machine, was a barber; Spinoza a glass-blower, Herbert Spencer an engineer, Edison a newsboy, and Stephenson, the inventor of the locomotive, an ordinary workman; Lincoln was a railsplitter, Grant a tanner, Andrew Johnson a tailor, Andrew Jackson a saddler, Vanderbilt a ferryman, Rothschild a peddler, Krupp a blacksmith, Paul a tent-maker, and Christ a carpenter. The names of distinguished amateurs could be continued indefinitely, but space forbids.

As I have discussed this question elsewhere and touched on it in other chapters, extended discussion might cause repetition. Besides, this volume is not intended for detail or abtruse minutiæ, but for the statement of leading facts for the masses of intelligent people, who abhor technical terms and dry details. Many people find scientific books so dry and

unpalatable, that, like the weary listener to the dry, dull sermon of the missionary, who said:

> "If I were a cannibal from Timbuctoo,
> I would eat that missionary and his hymnbook too."

Doubtless he thought the hymnbook would be excellent dessert after such a dry meal; and some readers of scientific works find most any kind of dessert refreshing after partaking of the mental pabulum of dry statistics and technical terms to be found in many scientific works.

Our American Indian is never dull or unpoetic in his conception of the Universe. He sees God in the lightning, hears Him in the thunder; and according to him the "Milky Way" is the "Path of souls" leading to the villages in the sun. Along this pathway travel the spirits of the dead, and the brighter stars are "the campfires for the solitary journey to the land of the hereafter."

The Japanese term the Milky Way "the silver river of heaven." And the ancient Greeks considered the blue dome of the sky a crystal globe where dwelt the Olympian gods.

No science should be dry, and above all astronomy should lift us to empyrean heights where we may tread among the stars.

CHAPTER VIII

RECENT ELECTRICAL DISCOVERIES AND APPLIANCES, WIRELESS TELEGRAPHY, ETC.

It is said facts are now being discovered and physical theories developed the ultimate result of which may be the explanation of the mysterious phenomena presented by the corona of the sun, the tails of comets, the aurora, terrestrial magnetism and its variations, nebulae and the zodiacal light. First, these facts are being established in connection with the pressure exerted by light which was pointed out by Maxwell and deduced by him from his electro-magnetic theory of light, which is, that when a pencil of light impinges perpendicularly on an opaque object, it produces a pressure on the surface of that object. This pressure is determined by the condition that if the object were set in motion with the velocity of light and the force against it kept up, the power to keep up the pressure would be equal to that carried by the ray of light.

Second, that particles smaller than atoms, called corpuscles or ions, are thrown off with high velocity from the intensely heated bodies. The sun, they claim, being such a body, it follows that such ions must be shot out from it. On this theory it is held that the explanation of a comet's tail is simple. The comet evaporates on the side next to the sun and, there being no pressure to hinder its expansion,

it begins in flying off in all directions. It condenses into very minute particles which, by reason of the impulsion or pressure of the sun's rays, are thrown in the opposite direction from the sun.

My explanation has been, without all this detail, that it was the same law of electric repulsion which drove the comet off and prevented it falling into the sun, which also drove the comet's tail in an opposite direction from the sun.

This solution of the comet's tail does not solve the greater one of the repulsion of the comet itself. The pressure of the electric ions or corpuscles might force the tail away, but a greater electric force from the sun drives off the comet.

Prof. J. J. Thomson and Arrhenius, a Swedish physicist, have by experiments discovered and elaborated the manner and principles on which the ions or corpuscles operate. Arrhenius discovered that these ions were conductors of electricity and why, and Prof. Thomson discovered each corpuscle had the same electric charge as an ion of hydrogen, and that each must be smaller than a hydrogen atom—in fact only a thousandth part of it.

And here for the first time in the world's history science tells us there are bodies smaller than an atom—a thousand times smaller than an atom. We are told an atom is a thousand times smaller than the particles of invisible air we breath; now we have an ion a thousand times smaller than the atom. Surely the scientists have at last reached my theory of the fourth state of matter which I call the electro-magnetic. In fact these ions or corpuscles may be electricity itself or the atoms of electricity which science has at last discovered.

And streams of these infinitesimal ions may constitute the swift and invisible currents of electricity which produce all natural phenomena. Prof. Blake, of the Kansas University, says: "Crookes called his cathode streams the fourth form of matter, but first to-day is such a state proven. Now, we must recognize at the beginning of this twentieth century a new form of matter. We have to deal with negatively charged particles so small that they have free paths of motion even among the atoms of substances."

As electric currents have free paths of motion even among the atoms of matter, these ions or corpuscles must be one form of electricity and must be both positive and negative, though the negative ions attract the most attention. I am glad to find science coming to my conclusions as to the fourth state of matter. But instead of calling it electric ions, electrons or Thomson corpuscles, it should be named electro-magnetic ether. It may be that science has at last discovered what electricity is, and that it consists of these infinitesimal corpuscles. Prof. Blake says: "These ions or corpuscles shatter into charged gases the molecules of gases and ionize the gases and make them conductors of electricity; they raise gases to incandescence and make them light-giving sources; they form nuclei about which matter will aggregate and condense; they seem to explain some of the most stupendous and perplexing problems in cosmic physics—such as the cause of the sun's corona, the spread of the comet's tail, the source of the meteors, the fantastic play of the auroras, whence the electric displays of our atmosphere, the

after-glow of the setting sun, and the why of the zodiacal light."

He says the corpuscles seem to be solving the big problems of the heavens, and adds: "The corpuscles become luminous when impinged upon by electric waves; and waves of light, which are electro-magnetic disturbances, must move them, and light will be produced and be scattered in all directions as if reflected from minute particles of ordinary matter. This may account for the glow of the nebulae, and the zodiacal light. These corpuscles, being admitted into the moist air of our earth, form nuclei of condensation and drops are formed; and the growth of the high, fleecy clouds finds its beginning around these corpuscles. They also strike our equatorial region; there they are influenced by the earth's magnetic forces and deflected towards the poles, and near the poles they reach gases dense enough to become luminous by their impact and show the fantastic colorings of the aurora.

"Our atmosphere lies, then, like a great insulating sheet between conducting layers—the surface of the ocean and the upper air. In the ether of this intermediate insulating region electric waves may be set up to be propagated as signals in straight lines in all directions. When wireless telegraphy first reached out timidly into space, we all said its currents would leave the earth's surface within a short distance, for they went out from the earth's surface in straight lines; but as they extended farther and farther they seemed to bend around the earth and to follow its curvature. Hertz, who discovered the electric waves which Marconi now so successfully uses in wireless telegraphy, showed us in 1887 that

conductors reflected these waves, and the ocean's surface sent them back when they impinged upon it.

"Now, with upper air layers proven conductors, the electric waves must be deflected from above as well and bent downward to follow the earth's curvature."

And thus electric signals, silent but all pervading, will before long circle our globe by their repeated deflections through this great speaking tube around the earth. The mysterious negative corpuscles, more minute than our smallest atoms, thus are themselves the very basis of the practicability of wireless telegraphy, our latest invention. Nay, more, may not these ions or corpuscles be atoms of electricity, and, being a thousand times smaller than atoms of matter, impregnate them with positive and negative force?

Inventors have been endeavoring to send messages over long distances without wires ever since the first tests were made in 1896. Only recently Marconi has succeeded in sending them across the Atlantic, two thousand miles through the air.

The distance to which messages may be transmitted and received depends on the amount of electric energy employed, the frequency of oscillation in the radiating system, the length of the electric waves emitted, the height of the perpendicular wires from the ground, the medium through which the waves are propagated, the sensitiveness of the coherer or receiver, and the precision with which the instruments are adjusted.

Long electric waves are radiated to greater distances than shorter ones, and much depends on the syntonic system, or tuning of the instrument, so as

to communicate with any selected receiver to the exclusion of all others.

An electric generator supplies the source of electricity for operating an induction coil to transform the low pressure into an alternating current of high pressure. This charges the wire suspended from a mast and the wire leading to the earth to a sufficient potential to cause the opposite charges of electricity to rush together, thus forming a spark or disruptive discharge through a small air gap; as a result high potential currents surge to and fro through the wires hundreds of thousands of times per second.

These high potential currents radiate electric waves which are propagated as light waves and spread out in every direction. It is said the whole process of transmitting and receiving wireless messages is not unlike to the emission of light and its reception by the retina of the eye.

The reception of these waves is by means of a vertical wire similar to that used in transmitting, the difference being the wires at the terminals are connected with metal filings inclosed in a small glass tube called the coherer instead of the spark gap. The electric waves impinge on the elevated wire and are converted into electric oscillations, which act on the filings, and an auxiliary circuit registers the impulses on a ribbon of paper in readable Morse dots and dashes. The higher the vertical or mast wires and the greater the number of wires, the greater the wave length and the farther the distance transmitted.

Marconi in his first Atlantic tests employed kites and balloons to carry the vertical wire so that

long electric waves could be obtained. Since then he has carried his wires on high masts, as at Poldhu, Glace Bay, and Wellfleet Station. The Marconi companies have equipped six stations in the United States, five in Hawaii, twenty in Great Britain, one in Belgium and one in France. There are eighteen ocean steamers, thirty-two British-men-of war and several Italian and American warships which have Marconi installations. Marconi says: "There are thirty-five land stations, twenty-one liners and eighty-five warships equipped with Marconi apparatus. Land stations cost $1,000, and ship equipment, $700. Trans-Atlantic stations cost $100,000 each."

Wireless telegraphy is the most recent miracle of electricity, and shows it to be the cosmic energy of the universe. Science stumbled upon it. And in the same way, Sir Wm. Crookes, in a recent interview, says: "Science may some day stumble upon the soul. Men of science believe more than they can express, spiritually as well as physically." He will not prophesy, but said with ominous import: "If you had come to me a hundred years ago do you think I should have dreamed of foretelling the telephone? Why, even now I cannot understand it. I use it every day, but I don't understand it. Think of that little, stretched disk of iron at the end of a wire repeating not only sounds, but words, and with the most delicate and illusive inflections of tone which separate one human voice from another."

Mr. Peter Cooper Hewitt, says the Electrical Review, has invented a new apparatus which it is said will make a revolution in the method of send-

ing wireless telegraph messages. The device consists of a glass globe about ten inches in diameter, having two tubes containing mercury sealed in the bottom of the vessel.

This apparatus acts as a powerful and effective interrupter and takes the place of the spark gap now used in discharging the condensers for setting up electrical waves. It enables powerful, rapid and continuous oscillations to be set up in the antenna, or sending mast, used in transmitting wireless messages, and not only enables messages to be sent over very great distances with ease, but permits secrecy to be maintained, which heretofore has been impossible.

The operation of this device depends upon two new phenomena in physics which Mr. Hewitt has discovered in the course of his researches. The first is the resistance of the mercury in the apparatus to a passage of current until a high potential has been applied; the second is the disappearance of this resistance after this high voltage has been reached.

The effect of these two phenomena is to permit a condenser to be charged to a high potential and then, by the disappearance of the resistance of the interrupter, to discharge it very rapidly. The result of this action is to set up violent and rapid current impulses in the circuit containing the condenser, and thence in the sending wire. The current impulse, being very powerful, will enable messages to be sent to great distances, and as the number of oscillations per second can be controlled, this permits of selective signaling. The number of impulses can be made very high—above a million a second. The

device is inexpensive and durable. It is considered a great contribution to wireless telegraphy and establishes it on a commercial basis, and selective signaling is solved and trans-Atlantic transmission will be easy.

Radium is a rare metal recently discovered, having remarkable qualities and very difficult to obtain. It is a constituent of pitchblende, which is found in many places, but only in a small way. So far all that has been procured has come from a mine in Cornwall. A ton of pitchblende carries about 15½ grains of radium and it is very difficult to extract. A grain is estimated to be worth $200,000 and a kilogram is worth about $2,000,000. There is only about one pound of radium in the world. It is estimated to be worth $1,000,000.

Radium was discovered by M. and Mme. Curie, in France, after they had familiarized themselves with the remarkable properties of uranium and polonium. Radium has many curious and inexplicable qualities. It continually emits heat and light without combustion, without chemical changes of any kind, and without any change in its bulk, appearance or molecular structure, which remains identical after many months.

It is so powerful in the energy it constantly hurls forth as to entail many dangers in handling it. Sir Wm. Crookes says in describing it: "Probably if half a kilogram were in a bottle on that table it would kill us all. It would most certainly destroy our sight and burn our skins to such an extent we could not survive. The smallest bit placed on one's arm would produce a blister it would take months to heal." It also emits electrons with a

velocity so great that Prof. Crookes estimates "one gram is enough to lift the whole of the British navy to the top of Ben Nevis, and I am not quite certain that we could not throw in the French fleet as well."

It has such surprising properties that Lord Kelvin was moved to say of it that, "it threatens to overthrow the correlation of forces," which is the rock-ribbed, foundation postulate of science. It seems already to have unsettled the accepted theory of light, and after the experiments of the Russian scientists who are now investigating it, Profs. Mendelief, Yigooff and Borgruan, the result may give us new scientific theories and a new nomenclature.

Radium tends to confirm my electric theory of creation, it also seems to aid the Thomson corpuscles hypothesis, and will open the way to new and important discoveries.

My opinion from very brief thought on the subject is that radium is in its nature a form of electric energy solidified, and may be a bundle of Thomson corpuscles or electrons combined and solidified by some process not yet understood. It is in the nature of an electric dynamo, and draws its constant supply of electricity from the air. It is plain that it is an electric substance and manifestation, for, as Prof. Crookes says, "it emits electrons with a velocity so great one gram would lift the British navy to the top of a mountain, and he is even willing to throw in the French fleet." If he were not a great scientist, I should say he was exaggerating like an amateur. Radium is at present a great scientific puzzle. It seems to destroy the present

theory of light and the conservation of energy and the so-called attraction of gravitation by reason of its marvelous energy and wonderful qualities.

But I stand with the scientists on the doctrine of the conservation of energy and the correlation of forces, and do not believe radium seriously threatens it, though Lord Kelvin had much reason to say so; and it is a puzzle yet unsolved as to how it maintains its energy without diminution of its force and bulk. I see but one explanation, and that is, that it renews itself constantly by drawing electric energy from the air, as a battery or dynamo draws it, and thus retains its marvelous power unimpaired.

I hold that energy, like matter, is a substance and can neither be created nor destroyed. It is impossible to create a molecule out of nothing or to reduce a single particle of energy to nothing. Energy, like matter, can be changed from one form to another or from one place to another, but all matter is one matter in its elemental form, and all energy is from one original energy, which I hold to be electricity. All matter is the aggregate manifestations of the invisible atom, and all energy is the varied manifestations of the one ultimate and only force in nature—electricity.

The transformation of energy, such as falling water, expanding steam, heat, light, vital force, and so-called gravitation, are all from the same electric elemental force, and this energy is without increase or decrease and is known as the conservation of energy. The definition given of electricity by Atkins in his work on electricity, which says,

"it is a molecular mode of motion," is an absurdity, for motion is an effect produced by a cause, and all motion is caused by electric energy. And the mode of motion is simply the manner in which the law of electro-magnetism operates. Thus there may be an electric law yet undiscovered by which a substance like radium may draw electric energy from the air and keep its force and bulk unimpaired for many months, or perpetually.

But radium raises many other questions affecting the nature of light and heat, such as how such great heat and light can be condensed into so small a compass and evolved with such wonderful power.

Prospecting for valuable metals by electricity has been recently introduced in Wales with remarkable success. In the Cwncystwyth mines in Cornwall new and valuable deposits of ore and blende were located. These mines have been worked for over fifteen hundred years, and much of this time the search for additional lodes has been going on; yet this electrical device accomplished in a few hours what fifteen centuries of search failed to discover.

By the electric method of prospecting a current of high potential—30,000 volts or more—is employed to energize a piece of ground supposed to contain mineral. The current is taken from the terminals of the generating coil to metal rods or electrodes which are pushed an inch or two into the earth. From these distributers the lines of force spread out in both vertical and horizontal planes and may be made to extend over an area of several miles.

Their presence is detected by means of a delicate telephonic receiver connected with a second pair of

metallic rods, which are stuck into the earth in any desired position. When the receiver is silent or gives only faint sounds, it indicates that the lines of force are deflected from their normal course. This reveals the presence of metallic masses in the earth, and, by moving the electrodes about, the position and area of an ore deposit may be determined with considerable accuracy. In new and unknown ground the operator would place his distributing electrodes about 200 yards apart, and remove his receiving instrument to a distance of half a mile or more. If his general knowledge of geological formation led him to believe that the metallic veins, if there were any, would run generally north and south, he would place his electrodes east and west, and if he found the electrical distribution normal he might conclude that the ground contained no mineral.

This remarkable electrical system for detecting the mineral deposits beneath the surface of the earth will doubtless be tested and perfected until man will be able without digging into the earth to ascertain the mineral deposits at any point beneath its surface. It may not always determine if they may be profitably worked, but in many mining regions it will be a blessing, and save much unprofitable work and sad disappointment.

Electrically heated cooking and laundry apparatus is now used in Germany and other countries. And there are farms on large German estates which are run by electricity. The Guednau farm in Eastern Prussia consists of 450 acres, and its dairy handles one thousand gallons of milk daily. It is lighted by electricity, has an electrical churn

and feed-cutting machine, water-pumping apparatus, incandescent lamps, threshing and grist mills, saw mill, automatic plough and electrical agricultural machines, all run by charged batteries and a fifty-horse power stationery engine moving two dynamos. Thus farming is made attractive and free from drudgery, and is run like a machine by the electric current. Electricity is used not only to run some farms, but also to hasten and increase the growth of farm products by running wires a few inches beneath the surface to energize the soil.

The Commercial Cable Company announce that their ocean cable connections will be complete with Manila, in the Philippines, by the 4th of July of this year, 1903, and that on that day they will telegraph around the world in forty seconds. What a miracle of wonders! Fifty years ago the speediest communication from point to point was by swift horsemen making fifty miles a day. Now the round earth's antipodes is only forty seconds apart by reason of electric appliances.

So wonderful has been the growth of electrical appliances and utilities that Prof. H. B. Shaw, of the Missouri University, in a recent lecture, said: "In twenty years the electric light industry has developed from nothing to the manufacture of over 100,000 incandescent lamps per day. Ninety-five per cent. of the street railways in this country are electrically operated. Yet this industry was cradled in Kansas City, Mo., only about twenty years ago."

This was when I first had my attention drawn to electricity, for I saw the building of that line on East Fifth street, in that city. That and the lighting of the gas by an electric flash from a human

body caused me to investigate electric phenomena and formulate the electric theory of creation.

Prof. Shaw said: "The latest development in long distance power is in California, where ten thousand horse power is transmitted two hundred miles from where it is generated with a loss of only ten per cent. of power in the line. Ten thousand horse power is sufficient to raise a million tons two inches per minute."

What a miracle that such power can pass along a wire no larger than a child's finger, and exert such force two hundred miles from where it is generated! Nothing but the invisible creative cosmic force of the universe could accomplish such a seeming miracle.

But some scientists are so irrational as to say this force is merely the pressure, twist or whirl of the ether, when it is plain that if the ether were as rigid as steel it could not exert such force and power. And as to it being a derivative force derived from the coal, wood or sun, it is plain it is the same force and the original, ultimate, creating evolving and only force in the physical universe.

There has been much labor and money expended in endeavoring to perfect a balloon or airship, which would be safe and could be directed through the air at will in any course desired. Electricity has been used as the steering power and aluminum, because of its light weight, for the frame-work. The French especially have given great attention to what they call the dirigible balloon, but no great amount of success has been achieved and, in my opinion, never will.

In the very nature of things, no safe airship

can ever be built. It was not intended that man should travel or carry burdens through the upper regions of the air. First, because the law of the earth's electric attraction forbids it. Second, because the sudden and powerful wind and electric currents that pervade the upper regions of the atmosphere are sure to bring ruin and death, sooner or later, and no human power can prevent it.

The balloon or airship is only a dangerous toy which can be useful perhaps in times of war to spy out the enemy, but utterly useless otherwise, and which means death in a very short time to all who risk their lives in its treacherous power.

There have been two recent and striking examples of this in the case of the two distinguished experts in Paris who thought they had built airships that could overcome the powers of nature, and while proudly exhibiting them to their family and friends were hurled to a sudden and fearful death.

The many deaths and narrow escapes from these useless and dangerous toys make it almost certain that no sane man would risk his life in one of them, though there were a thousand at his command free of expense.

Of all the useless follies on which inventive genius and money have been expended, the airship is the worst, because if millions of the most perfect ones the imagination of man can conceive were built and offered free, no prudent man would risk his life or his goods in their treacherous care. The powers of nature, and what the ancients called the demons of the air, forbid that the airship should ever be anything more than a dangerous toy for

reckless persons, who wish to jeopardize their lives.

Great efforts have been made, much money expended and many lives lost in futile attempts to find the North Pole, which when discovered may appear like any other ice field, mountain glacier, or snowdrift of the Arctic Circle. But the thirst for knowledge and the love of adventure and exploration where no financial reward can be expected is creditable to humanity, and shows that the love of knowledge is sometimes above that of sordid gain. The struggle for two centuries has been to reach the North Pole, and it has been approached as near as 700 miles; but recent reports indicate that conditions are more favorable for reaching the South Pole; and a French expedition outfitted this year for the North Pole have changed their destination to the South Pole. One or both poles are likely to be discovered in a few years.

There have been many scientific expeditions to various parts of our globe for astronomical observations. One recently sent to Chili from the Lick Observatory should command especial interest since its object is by the study of the southern stars to ascertain where the earth and the solar system is going. We know our sun system is moving swiftly towards the north, in the direction of the stars Vega or Alpha Lyra, at the rate of more than forty-three thousand miles an hour. Each year we are more than three hundred million miles nearer these stars, unless they also are in motion in the same direction. The southern stars have been studied much less than the northern stars, and the testimony of both is desired to determine the direction of the mysterious voyage of the sun and its

family of worlds through the unexplored regions of space.

We have been watching the stars in front of us for many years, and will now give some attention to the stars in our rear to confirm or disprove many astronomical hypotheses.

It is like getting back to anti-Copernican times to have Dr. Alfred Russell Wallace, in his flights of speculative astronomy, say that, "our solar system is central in the universe and that this earth of ours is probably the only planet on which humanity has been developed." In a recent article he undertakes to establish this ancient fallacy. It is very doubtful whether the universe has a general center, but if it has it should be plain to our learned astronomer that as our system is moving through space in a straight line at the rate of 420,000 miles per day it could not occupy a central position very long. The only means we have to judge of the inhabitability of other worlds is by analogy, which is the foundation of all scientific hypotheses. The likeness in form, substance and electric power of suns and planets to our own world leads to the natural conclusion that all suns and worlds are inhabitated. In fact any other assumption is contrary to all cosmological reasoning and all analogy to be found in universal nature. Nature nowhere bestows vast substance and power without commensurate results of life and growth, and it is reversing all the laws of reason, analogy and cosmic experience to hold to the contrary. We must give up this egotistic assumption that our little world is the only living world in this vast universe, or that it is only one of a few living worlds.

There are no dead worlds or planets or burning suns in this electric universe, and we are not "the only pebble on the boundless beach" of creative worlds. We have the same electric fire in our bodies that is in the sun, and it neither burns us nor causes us to shrink up annually, as the scientists say the sun does. It is not the consumer of life, but the giver of life, and the continual life energy of the universe.

During a recent eclipse of the moon, Prof. W. H. Pickering, of Harvard Observatory, ascertained that the bright spot around the crater Linne on the surface of the moon grows considerably larger when deprived of the heat of the sun. For many years it has been noticed that the Linne area has been gradually changing and many theories regarding the causes have been advanced.

Prof. Pickering is inclined to the belief that it is hoar frost or ice. This tends to confirm my theory that the moon has an atmosphere and some moisture which is mostly hidden in its perforated volcanic surface.

Alexander Young, an astronomer of Laport, Ind., announced on February 20th, 1903, that, "from observations made by him, he is confident that the sun is inhabited; that with his instruments he has seen on the sun's surface mountain sides with great and precipitous rocks which glow with prismatic colors, mingled with the greenness of perennial vegetation."

I was not expecting this scientific proof so soon, but I am satisfied that the inhabitants, the mountains and the perennial vegetation are there; and if he has succeeded in magnifying the rays of light

from the vast openings in the sun's photosphere sufficiently he can and did see them.

I am a firm believer in the inhabitability of the sun, and that it is a perfected, self-luminous world —a world like our world, only vastly larger and more prolific in life and power. As it is the source of all life and power to the planets, it must be the creator of all life to its celestial inhabitants.

Profs. Proctor and Herschell seem to believe that most of the heavenly bodies are inhabited. Sir Wm. Herschell went so far as to contend for a time that the sun was inhabited or inhabitable because, he said, the heat of the sun was in its photosphere, which was far out in space and many miles from the sun's surface, and that there were cool clouds and layers of atmosphere, he thought, between the heat and the sun's surface which made the body of the sun cool enough for animal and vegetable life and human habitation. He changed his mind, however, in a few years and held the heat of the sun was too hot to allow anything in nature to keep such excessive heat from its surface, and besides, the law of the conservation of forces just coming into scientific prominence then forbid it.

Prof. Proctor, says: "I adopt the principle of Sir Wm. Herschell that analogy is the chief and the best guide for the student of astronomy. That general resemblance of structure indicates a general resemblance in the purpose which the celestial bodies are intended to subserve is evident when we compare the stars with our sun or with each other. Some time or other those worlds have been or will be the abode of intelligent creatures seems to be a fair conclusion from what we know of their structure."

Deity does no irrational things, nature is always logical and consistent, and where there is such vast resources of substance and power bestowed, as in our sun and the eighteen millions of suns of the universe, it was not for the purpose of making bonfires and blazing furnaces of them. But they were created for vaster, more perfect theatres of intelligent life and activities. Besides, burning them up could bestow no benefit on the planets; the heat could not reach them, and if it could it is only a sensation, and sensation cannot produce vegetable or animal life, or control the earth's motion.

One of the greatest of modern discoveries is that heat is not a substance but a sensation, produced by electric currents. So that eighteen millions to one hundred millions of suns do not need to be burning up to furnish electric currents to their planetary worlds. And our sun is not burning up thirty quintillions cubic feet of itself annually, and a hundred millions of suns many a thousand times larger than ours are not burning up a thousand times more of themselves, as the astronomers claim, and the whole thing is a great absurdity and superstition.

CHAPTER IX

AT PRESENT SCIENCE IS IN A DUBIOUS AND CHAOTIC CONDITION

THE last few years have been remarkable for the diligence with which scientists have scrutinized every phenomena of nature, and the abundance of new facts which have rewarded their researches.

They have also been remarkable for the changes in scientific opinions, which usually are so gradual as to be imperceptible, but which have recently taken on the speed of the earth's solar revolution in their transition from the old to new theories.

The vast body of scientists are seldom a unit in the acceptance of any theory, even of the most fundamental nature. And where there is such diversity of belief each student of nature is entitled to form his own opinions and beliefs.

But the most pitiable and unfortunate of the one-sided scientists are those who would banish logic from the realms of physics, and who regard a deduction or a theory as an enemy of science; who heap scorn on analytic reason—the highest gift of Deity to man—and who deem the tabulation of dry facts without causes the only purpose of science. Who want science fenced in with a stone wall and separated from religion and philosophy, and the earth cut up into sections and labelled astronomy, chemistry, geology, and so on ad infinitum; as if na-

ture knew anything about astronomy, chemistry or geology, or ever considered anything but the unity and harmony of the whole universe, which includes science, religion and philosophy, one and inseparable, as God and nature are inseparable.

Mr. Cope Whitehouse, a New York scientist, says of present science: "The only fact established beyond doubt regarding suns and planets is their revolution on their axes, and this is all that is needed to generate light and heat. They are arc dynamos, and each in turn transmits what it receives to its neighbor on the circuit." This is well stated and shows that nine-tenths of the accepted facts and theories of science are mere guesswork, founded upon conjectures of some eminent scientist who was accepted as authority a hundred years ago. And the standard scientific works have propagated them as scientific facts.

It is a fact apparent to all well informed students that astronomy, physics and chemistry at present are in a chaotic condition—that nearly all the scientific facts and theories established for two hundred years are now in a state of uncertainty and are virtually overthrown by recent discoveries.

The recent discovery of radium seems to overturn the rock-ribbed scientific theory of the conservation of energy, and raises many new questions in regard to the nature of light and heat.

Lord Kelvin, recognized as the highest authority, says: "It threatens to overthrow the doctrine of the correlation of forces." If the scientists would accept the electric theory of creation, its explanation would not be so difficult, for radium seems to be a bundle of electric ions or corpuscles which

have the power of drawing electricity from the atmosphere, like a minature dynamo or a galvanic battery, and thus continually renewing itself, so that there is no loss of power and no shrinkage in size or bulk. The scientists may soon be forced by radium and other natural phenomena to accept the electric theory—that electricity and not gravity is the one and only fundamental force in nature.

The recent discovery of the three lines in the spectrum of hydrogen, discovered by Prof. Pickering, of Harvard, may upset the whole theory of the seventy-three elements set forth in our books of chemistry and said to constitute all the elements of the universe. It may prove they are not elements, or at least not primary elements at all, and finally drive the scientists to my theory that there are only three primary elements in the universe, and they are spirit, electricity and matter. That the so-called seventy-three elements are only different combinations of two of the original and primary elements—matter and electricity—and are what Herschell said they looked to be—"manufactured articles."

Prof. Pickering was the first to analyze lightning with the spectroscope and show that hydrogen is a compound substance made up of lines belonging to at least three chemical elements. This recent discovery was a great surprise to scientific men. And it was confirmed and doubly proven by the spectrum in the new star, in the constellation of Perseus, known as Nova Persei, which also shows in the hydrogen there the same lines consisting of at least three chemical elements.

This is new proof by high authority that oxygen,

hydrogen and all the so-called elements are—as I have contended for many years—only compound substances, and justifies Prof. Serviss' statement in the New York Journal, that these facts "may revolutionize science and reconstruct chemistry."

The marvelous increase in brilliancy of the star Nova Persei last year, and its sudden shrinkage, all within a few days, and the same being observable almost instantaneously upon the earth, when that star is 3,400 light years distance from the earth according to the accepted speed of light, which is 186,000 miles a second, unsettles the whole question as to the speed of light. It tends to prove that light is instantaneous, as Prof. Wright says gravitation is.

No less an authority than Prof. Simon Newcomb calls the scientific world's attention to this phenomena, and shows it throws doubt on the long-accepted theory as to the speed with which light travels. In his address before the Astronomical Society, December 29th, 1902, he says: "There is an inadequacy in the speed of light to explain the phenomena. We are forced to the conclusion that there exists in the universe a cause susceptible of transmission with a speed many times that of light."

What cause exceeds the speed of light, which is deemed the swiftest thing in the universe? We know of none. What was it surprised the scientists and came to us with many times the supposed speed of light? It was light, only light. Then this "inadequacy in the speed of light" came on double-quick time, and proves that light can travel many times faster than the scientists for two hun-

dred years have declared it could. And this eminent scientist, with cautious diplomacy, does not directly attack the accepted speed of light, but says "there exists a cause" that produces a greater speed than light. But as only light came, did the "cause" bring it or did it come with its own velocity? If a "cause" or unknown force brought it, then we have a new force in nature which the scientists must reckon with. So they must accept the alternative and either change the speed of light or deal with a new and unknown force.

In addition to the above complications, Prof. J. J. Thomson, discovered (1901), the electric ions or corpuscles which is considered a new form of matter and force.

The discovery of these electric ions or corpuscles a thousand times smaller than atoms has produced utter confusion in the scientific world, and outside of the electric theory of creation they can make no possible explanation of them.

The fact is, the scientists are on an island of doubt, in a sea of uncertainty, scanning with telescope, microscope and spectroscope the ocean of foggy knowledge and dubious assumed facts to find a port of safety.

Their attempts to fix the specific gravity of the sun, and the sun's burning up and shrinkage as its source of heat, and the heat as the life of the planets; their treatment of heat as an entity and substance, when it is merely a sensation; their reliance on the spectroscope to indicate heat in distant suns, and their accepting gravity without a cause or an explanation, show the blind for centuries have led the blind in extravagant guessing.

But since they have seen an electric battery and an arc light, they should be ashamed to ever declare "the sun is hotter than any terrestrial furnace," or that it is hot at all. The arc and incandescent lights are object lessons they ought to study, for they will see almost an exact representation of how all light, heat and vital force are created on suns and planets.

They will see two wires, one positive and the other negative, brought together or so near together that in order to complete their electric circuit they must pass through a little space of resisting air, which is a non-conductor, and then they burst into light and moderate heat. In the same manner the positive and negative currents of electricity of the sun and earth, without wires, come together in our atmosphere, which is near the earth's surface a dense resisting non-conductor, and in order to complete the circuit they burst into light, heat and vital force and give life and energy to all animal and vegetable organisms. But the heat must be and is generally moderate, as no vegetable or animal life can exist in excessive heat. And as excessive heat means ruin and decay, therefore no burning sun can furnish light or give life and growth to any planet.

Prof. Simon Newcomb, the learned astronomer, says: "The sun is not a solid body, but must be liquid or gaseous, at least at its surface." He gives this singular reason, therefore, that "the sun's rotation at the equator is completed in less time than at a distance on each side of the equator."

I question both the fact and the sufficiency of his reasoning on this point. According to his own

statement, the sun revolves at its equator 4,000 miles an hour, or over a mile a second, while it revolves very slowly near its poles and virtually is not in motion at all at its poles.

This rapid motion at the equator and slowness of motion near the centre of the sun is calculated to deceive the eye and make it think it completes its rotation at its equator in less time than at a distance from it, looking down along the slope of the sun's vast circumference. This is no evidence, for we see only the moving clouds of light on the outer rim of the sun's atmosphere, ten to twenty thousand miles or more from its surface, and they seem to and do complete their rotation a short time sooner. This they naturally should do. How frail and uncertain is the argument based on such doubtful and assumed facts?

Thus these wise astronomers claim from this slim, unreliable evidence and the assumed excessive heat of the sun, that the sun is not a solid body at its surface. Yet the same author rejects this same evidence—that Jupiter is not a solid body—in the following language: "The difference in the time of Jupiter's rotation at the equator and in middle latitudes is, so far as we yet know, about five minutes. That is to say, the equatorial regions rotate in nine hours and fifty minutes and those in middle latitudes in nine hours and fifty-five minutes, a difference amounting to 200 miles an hour, a seemingly impossible difference were the surface liquid. We cannot assume this to be the case without more observations than are yet recorded, as no well defined law of rotation in different latitudes has yet been made out." Thus this learned astron-

omer will not assume for Jupiter what he assumed for the sun, and weakens and destroys in Jupiter the very same arguments he used to prove the sun was not a solid body at its surface.

This same learned astronomer—and I mention him because he is high authority and has written the most recent work on astronomy—says that, "under the enormous pressure of the earth, continually increasing to the center, the matter composing the inner portion of the earth is compressed to the density of a metal. If the earth were composed of a fluid or even of a substance which would bend no more than the hardest steel, such a motion as that of the earth upon its axis would be impossible."

I accept this as a very reasonable conclusion, and hold the same rule applies to the sun, and that the sun's "enormous pressure, increasing to its center," would compress its inner portion to the density of a metal; and that the sun could not revolve upon its axis and retain its rigidity as it does unless its inner or central portion was as rigid as steel. And this necessarily means that its surface is about as solid as that of our earth.

Therefore the sun cannot be molten or liquid at its surface, as the scientific guessers have prognosticated. As they have guessed wrong about nine-tenths of the time, this is one of the nine hundred bad guesses.

Lord Kelvin, our wisest scientist, a few years ago estimated that our earth, only fifty miles below its surface, was a molten mass of fiery metal. Now, Simon Newcomb says it has the density of metal, and is as hard as steel, and I think Lord Kelvin has changed his opinion and will agree with him.

Thus the hoary-headed superstition that the center of our earth was a molten mass is passing away, and it will be the same as to the heat, and molten condition of the sun—it will be relegated to the plutonian shades of ignorance and superstition.

Because there were numerous volcanoes, geysers and hot springs scattered over the crust of the earth and in some deep mines there were hot sections, the scientists jumped at the conclusion that the inner portions of the earth were a molten, fiery mass. This was to accord with their false theory of a red-hot molten sun, and their assertion that the earth had its inception as a fire mist, and rolling ball of white-heated gases. But the scientists have changed their theories rapidly in recent years. They are just beginning to discover that there are zones of heat and cold beneath the earth's surface just as there are above its surface. That there are electric currents of heat in volcanic regions and mineral and mining sections, and none in others, and even in the same mines there are warm and cold sections.

Take the Comstalk mines in Nevada. A section 2,300 feet below the surface is very warm, while another section 1,200 deeper—being 3,500 feet below the surface—is very cool. Surely Lord Kelvin would now laugh at himself to think he made such a calculation of the heat of the earth and said it was a molten mass of fire fifty miles below its surface. And he even said it was so hot seven miles down in the earth that water could only remain or exist in a state of vapor.

Ye gods! When so great a prophet makes such mistakes, surely the little prophets that walk in his

footsteps ought to "go 'way back and sit down," and cease talking about the heat of the sun.

They should quit telling us the Beneficent Creator is burning up 18,000,000 of his most magnificent and beautiful worlds to heat his little, insignificant planets. They estimate our sun burns up thirty quintillion cubic feet of itself annually, and 18,000,000 of suns are doing the same, making the equivalent of a world destroyed every year and a sun every decade.

These statements are so unreasonable and appalling they refute themselves. I mean no disrespect for these learned but misguided scientists who have for two hundred years built all their theories on heat, which Langley now says truthfully is nothing but a sensation. Thus they built the universe on a sensation, and to sustain the old traditions they want to keep it there. They said the earth began in heat, that it was a ball of fire a few miles below its surface, and the suns were great flaming furnaces burning up with quenchless fire. They made the Great Creator a fire demon and world destroyer.

If Prof. Parker's testimony is to be relied on, nine-tenths of them waste their time on useless calculations and data. They have a wonderful faculty of putting the horse before the cart. For example, Prof. Huston of Princeton, says. "Electricity is being constantly produced during the phenomena of every day life. It is produced by chemical action, differences of temperature, the motion of conductors and magnets and the various physical and chemical processes that occur during the life and growth of plants and animals." Now, this is misleading, because it states facts backward. It is

not true that electricity is being produced in the sense he uses it by these phenomena. These phenomena are being produced by electricity. They are the manifestations of electricity. Electricity is the cause; they are the sequence or results, and he should say electricity is manifested by these things. The same author says: "The earth is to be considered as one huge magnet." This is very true, and as a great magnet does not need to be hot to generate electric life-giving energy, no astronomer ought to look at an electric light or an electric battery without blushing that he ever called the sun hot.

Electricity can be generated without burning coal or wood or the use of a furnace. The turbine wheels that are turned by the waters of Niagara Falls, without heat or furnace, can generate a hundred thousand horse power.

The placing of two or three pieces of metal one above another with a moist substance between them will create a voltaic battery. And mines of two or three kinds of metals or ores, when clay or any soft substance between them become moist, will create a battery that will tear up the earth for miles and produce a geyser or an earthquake.

Prof. Proctor agrees with Langley in rejecting the nebular hypothesis, when he says: "Under the continual rain of meteoric matter the earth, sun and planets are growing. And the formation of the solar system resulted from the aggregations of vast meteoric and cometic systems rotating through space has greater support from what is now going on, and is far more satisfactory than the nebular hypothesis of La Place. The nebular hypothesis affords no explanation of the strange variety of

size in the planetary system, variations of inclination among the planets, or the retrograde and almost perpendicular motion of the satellites of Uranus and Neptune. A general explanation of all these matters is at once suggested by their origin from aggregations of meteoric systems." This agrees with the electric theory of creation.

All the Newton-La Place theories of gravitation and the nebular hypothesis are now called in question by our wisest astronomers. And one of them has pointed out two hundred instances in which gravitation is set aside and ignored in the motion of the heavenly bodies. Such instances as the runaway stars, the retrograde motion of satellites, the repulsion of comets from the sun, and so on ad infinitum. And as to the outer planets, Uranus, Neptune, Jupiter and Saturn, being older than the inner planets and being thrown off first from the vast whirling sun nebula of La Place's imagination, all modern astronomers either call it in question or reject it, as a fallacy disproved by more recent facts and discoveries. It is reasonable to suppose that there are zones of electric energy in space in each solar system which may help to hold and keep each planet in its orbit, just as there are belts and currents of electricity in the atmosphere and outer crusts of earth and planets. And the sun may send a different kind of electricity to each planet and receive a different kind from each planet.

Abbé Moreau, the noted French astronomer, in supporting Col. du Ligondes, who opposes the La Place theory of the formation of the solar system, in a recent article, April, 1902, undertakes to show that Mars is not older than the earth, as held by

the La Place nebular theory, but on the contrary is much younger. His arguments entirely demolish the nebular theory that the outer planets were thrown off in successive rings of nebula from the sun, and therefore the outer planets are the older. In addition, Flammarion seems to take the same position, for he says: "In Mars two moons revolve rapidly in the heavens in opposite directions, which seems to refute the nebular hypothesis." These all tend to support my electrical theories, and relegate the Newton-La Place theories to the shades of obsolete fancy and mistaken conjecture.

Flammarion also says: "The earth in its orbit describes a spiral, and since its creation has never passed twice through the same point in space." This also supports my electrical theory of globular spheres and spiral motion in space to accord with the laws of electro-magnetic energy. This spiral shape of the earth's orbit, I contend, and not the tilting of its poles, creates the changes of seasons. Its poles seem to tilt or change because the earth passes above and below the line of the ecliptic, and in its spiral circuit has the sun above the earth part of the year, when it is summer in the north temperate zone, and below it part of the year when it is summer in the south temperate. And the elliptical shape of the earth's orbit is, I contend, caused by the sun being in motion, which lengthens the circle of the orbit in the direction the sun is traveling and causes the earth to be four million miles nearer it when it turns in front of it, and the same distance farther from it when it turns in the same direction the sun is traveling. It seems strange that no astronomers have thought of these things.

Sir Robert Ball said recently: "The most important advance in astronomy was Prof. Keeler's discovery of nebulae in such enormous numbers, and the fact that most of them were in a spiral shape." This spiral shape accords with the law of electro-magnetism and sustains the theory of electrical creation of suns and planets. Matter could not be gathered under any other law.

In addition to the contradictions and complications of science already mentioned, scarcely a fundamental principle or concept remains. One of the eternal indisputable postulates of science was that "two bodies cannot occupy the same space at the same time." But that is exploded, and we know they do and we have proof of it every day. There are numerous instances; I will mention only one: Twenty-eight electric currents can pass over the same wire at the same time, fourteen one way and fourteen the other, and occupy the same space and do not interfere with one another.

Scientists used to put great stress on solid matter, and their primary division of matter was into solid, liquid and gaseous. They have recently discovered there is no such thing as solid matter. What they termed solid matter is but the outer and visible shell of invisible forces. That not a single atom of matter touches another atom of matter; but there is a space between them, and the atoms revolve around each other in very much the same way as the earth revolves around the sun, thus showing that the laws of electro-magnetism are the same in atoms as in worlds.

The scientists only discovered the non-solidity of matter since the use of the X-rays, and the Crookes

tube, and they have been puzzled ever since to know what holds the atoms or molecules together in organized form. They undertake to say it is gravity, but gravity is weight, and atoms have no weight, and they are forced to look to electricity and magnetism to solve the question. And the electric theory gives the only rational explanation, which is, that all things are held together by magnetic attraction or cohesion under the laws of organic affinity. The molecules of iron, stone and marble do not touch each other, but their magnetic attraction is stronger than that of wood or hay; that is why they have more solidity, strength and endurance. Science said we could not look through a grindstone or any solid matter, but we can. We can look through men, grindstones, iron and brick walls, and if we could turn on sufficient electric power we could look through the earth and take photographs of Chinamen on the other side of the globe.

Prof. Serviss, in the New York Jornal of October 1st, 1902, calls attention to "the remarkable growth of speculation concerning electric or electro-magnetic influences exercised over the earth by the sun and planets," and says: "They have been seized upon by astrological soothsayers to bolster up their pretended science."

As I have never taken any interest in astrology, but have taken great interest in the electro-magnetic power of the sun, I am surprised at the obtuseness that would undertake to blend them together when they have no scientific relation.

Astrology undertakes to reveal the future by the position and influence of the stars, and is entirely

different from any electrical theory of the sun or planets.

He says, "The subject of the sun's electric influence is of absorbing interest, but there is no solid scientific basis for a genuine theory."

From the lack of knowledge he displays of the well-known laws of electricity I am not surprised at his statement. He says and illustrates it by a diagram: "If we grant the sun does act as a stupendous source of electro-magnetic waves, as the planets circle about the sun in nearly a common plane, and sometimes lie practically in the common plane in a straight line, in such a contingency there may be a stream of electric energy linking them all together." He seems to think this would produce confusion and settle the whole question.

He should know that the simplest law of electromagnetism teaches that the electric attraction of every planet is the measure of its power in drawing the electric currents of the sun. Distance from or nearness to the sun or planets or their being scattered or all on the same plane or in a straight line has nothing to do with the supply of electric power from the sun.

Each receives the positive electricity from the sun, which it draws by reason of its negative polarity. He should know that twenty-eight currents of electricity may pass over the same wire at the same time, fourteen one way and fourteen the other way, and do not interfere with one another, and each go to their separate destinations. The sun may send a different electric current or vibration to each planet and nothing in the universe could prevent it from reaching that planet. It would pass through

or go round any other planet or substance in its way.

Wireless electricity is founded on the basic principle that an electric current goes only to the opposite electric polarity and vibration which draws and attracts it or is attuned to it.

Prof. Serviss says: "If I examined this subject with a show of interest, it draws upon me sour and suspicious looks from my scientific friends." He should remember that all great truths have had to struggle with "sour and suspicious looks," ever since man began to investigate, and that we must look not to authority for truth, but *to truth for authority*.

He said, in the summer of 1901, the sun was a furnace and the black spots the open door of the furnace, and we would have four years of torrid heat on account of those black spots; but he proved himself a false prophet, like the rest. But he is not to blame; he only followed the old traditions and scientific authority, and they proved to be a broken reed on which he leaned. I mention him because he is an able and recent writer on astronomy.

That science is at present unintelligible and almost chaotic to the masses of fairly educated people is too true for superfluous argument. The old farmer's definition of bacilli is a fair sample of the nebulous condition of many minds on scientific subjects. He said they were "little critters from the back cellar that floated in the air, called germs in Germany, parasites in Paris, and microbes in Ireland." Many intelligent people deplore the prolific use of useless technical terms and dry statistics of most scientific works, and their use makes them

exclaim with Portia, "My little body is aweary of this great world."

I find a very sensible editorial in the New York American of April 18th, 1903, entitled "Science Needs Another Interpreter." It says: "Science is moving too fast for the ordinary layman, who would like to keep pace with its theories and discoveries. . . . . Chemistry and physics needs a man who will do for them what Huxley did for biology—a man who has not only a scientific mind but a literary capacity. . . . . Vaguely the layman knows there have been all sorts of discoveries since the X-rays showed him there was a way of seeing through a grindstone.

"But he had the idea of X-rays only partially digested when science came on him with the cathode rays and crowned the confusion by discovering radium. With a mind dazzled by light rays that are invisible, and invisible rays that are not light, and bewildered by being told of a substance that gives off terrific energy without loss of bulk or power, he lays away the natural philosophy of his college days and reaches blindly for what the new men have written of these things.

"He is then confronted with what reads like a catalogue of fossil insects diversified by stepladder algebraic formulas, the mere parenthesis of which are enough to make a school teacher shudder. The wretched seeker after knowledge is confronted with measurements of light waves until sunbeams are powerless to illuminate the day. Similarly he gathers from the fugitive words he understands among the mass that has no meaning for him, that Prof. Loeb has been putting salt on eggs and creating

sea-urchins, to the utter distraction of the rules of nature's game as he has learned them.

"Somewhere there must exist the man whose skill with the pen and whose appreciation of knowledge are equal to the task of acting as interpreter between scientists and the world. . . . . The world is hungrier for knowledge than it is for amusement, and the sales of the books of the man who succeeds in making science readable will make the returns of even the most popular novelist small in comparison."

This splendid editorial states facts graphically and truly, and portrays the real condition of things. It shows a scientific chaos, which portends a transition state, and a rapid evolution from the old traditions to a new and more perfect science. Without meaning to be egotistic or to assume any superior knowledge, or to have any of the qualities suggested in the editorial, I am impelled to suggest that if there are persons befogged scientifically, if they will read The Cities of the Sun, I think their minds will be clarified on many points and many of the old scientific traditions will fade into the nothingness from which they came.

I am glad to welcome so able a champion of the electrical theory as Mr. Cope Whitehouse, who achieved fame by discovering that the depression in the Egyptian desert could be used for irrigation, and which the English Government is now utilizing.

This New York scientist says, in an interview in the Kansas City Star of Dec. 2d, 1902: "The English scientists have partially reduced our solar system to a machine, and assigned to Deity little less than the duty of squeezing heat from the sun or

stoking it with aerolites. Such theories are made for sale and not for science. When Newton suggested that gravity might swing the moon as well as attract an apple to the ground, he knew nothing of electricity. He might have observed however, that a comet never enters the sun and therefore could not have been attracted by it.

"A comet, as it closely approaches its supposed goal, changes its direction and darts away, tail foremost, in a curved path due to a resistance too feeble to obstruct its passage. No allowance is made for the attraction of gravitation in wireless telegraphy, and the most superficial observations in ozology, or the science of smell, show that there is a force in odors which ignores gravitation.

"We have reason for supposing that gravitation is a purely local affair, and heat and light do not emanate from the sun. Heat comes from the earth, and the light from the atmosphere, precisely as the film in an incandescent lamp is heated by the resistance it offers to the electric current, and light is produced by the vibration of the motes in the air."

"The only fact established beyond doubt regarding the sun and planets is their revolution on their axes, and this is all that is needed to generate light and heat. They are arc dynamos and each in turn transmits what it receives to its neighbors on the circuit." This accords with my theory published five years previously. He continues: "We do not see the stars, nor even the sun.

"The astronomer who claims that his eye penetrates space billions, trillions and decillions of miles stultifies himself in the next breath by declaring

that worlds and solar systems are being formed of cosmic dust. Was the polestar ever obscured by the interposition of a world in formation? Yet the film formed by the breath of the observer on the eyepiece of a telescope would obscure Jupiter. Evidently, therefore, we no more see a star than we see a distant power house that supplies electricity to trolley lines. We only see the end of the stellar or solar ray where it enters the bubble of which the earth is the center.

"It is strange that no astronomer has ever heretofore observed that the magnifying power of a lens, two inches in diameter could have no appreciable effect on an object as remote as Saturn. Yet the ring and the satellites of this planet are thus made visible. In short, there is a kind of screen which presents the image of stars, as on a sheet between the observer and the magic lantern at an exhibition. The image can be magnified but their distance is perhaps scarcely fifty inches."

In regard to the eruptions of Mont Pelée he says: "Within twenty miles of the earth there is a cold as intense as liquid air. Differences of temperature can be converted into an electric flash, as electricity can be converted into heat. The so-called eruption of Mont Pelée was purely electrical. The sympathetic eruption of La Soufrière was partly due to an interrupted circuit and partly an induced current. There was no flow of lava, but can any one imagine the crater discharging what was said to have issued from it? . . . . When there is an accurate statement of facts it will be found that neither dust nor gas came from the volcano. Really, only mud, hot water, smoke and stones were ejected.

This material descended as a thin covering of uniform thickness. And this blanket was the dust precipitated by the electrical vibration still warm from crystallization. Had it been otherwise there would have been about one hundred million tons of frozen mud falling in the neighborhood.

"What Père Mary saw was the cloud of decomposed matter caused by the electric discharges. It is as absurd to speak of all this coming out of the volcano as it would be to say that the smoke and stifling gases in a fire caused by an electric wire came from the power house. As a fuse burned out in the circuit, Pelée simply sparked.

"It set fire to everything between its summit and the sea, and the surface of the water itself was made warm. Now you see how mastodons are found, with hair and flesh intact, imbedded in Siberian ice. If the uprush of an air current would disturb the cold stratum above a chimney, what would be the effect of the upheaval of a mountain mass with or without a volcano? It is unnecessary to suppose that the axis of the earth has changed.

"The ice crop of the Antarctic is much larger than that of the North Pole, but the volcanoes of Erebus and Terror are in violent activity. There are scores of terrestrial and celestial phenomena, from the double tide to the cold moon, that can be *explained only by the electrical theory*."

Thus I could fill a book with the recent proofs and statements of scientists which sustain the electric theory.

The dropping of an icicle into a barrel of unslaked lime once caused a great disaster in one of our cities. The slaking of the lime caused a

fire. The firemen came and the more water they used the greater was the heat generated, until an explosion wrecked the neighborhood. In like manner, water in the fissures of the earth act chemically upon various minerals and produce similar results. Two or three layers of different metals in the earth produce a galvanic battery and results in the disaster of a volcanic explosion or an earthquake.

A silver dollar, a twenty-dollar gold piece, and a piece of copper of similar size, placed one on top of the other, with pieces of moist paper blotter between them, will generate sufficient electricity to send a telegram. Two iron tablespoons tied together with a piece of copper wire and their ends dipped in water will generate an electric current sufficient to send a cablegram across the Atlantic Ocean. So says Prof. Trobridge of Harvard. If this is true, what a fearful volcano or earthquake may be produced by water moistening the clay or substance between the thousands of acres of different mines or metals one above the other in the outer crust of the earth?

These things are marvelous to contemplate and paralyze the imagination.

CHAPTER X

ELECTRICAL CREATION EXPLAINS NATURAL PHILOSOPHY

HERBERT SPENCER says: "Science is partially unified knowledge; philosophy is completely unified knowledge," and the first knowledge obtained by primitive man was that of sense and inference from such experience. Later there arose a disposition to speculate as to that which lies beyond sense and known only by its effect on sensible things. This speculative propensity is worthy of the highest consideration as a means of knowledge. It has developed all of the numerous systems of philosophy which have flourished in the history of the human race.

First in the order of development comes the knowledge of things through the direct experience of physical sense, then comes imagination, reasoning, theoretic science and speculative philosophy.

The object of all systems of philosophy is to comprehend and teach the truth about the world around us, especially that part supposed to exist beyond the range of our senses, and to prescribe what is right and good in the life of man.

In modern times the attempt to unite all the sciences into a general system has been made by August Comte in France, and Herbert Spencer in England. According to Comte, it was time wasted

and labor lost to attempt to explain the cause of gravity, chemical affinity, and electric and magnetic attraction and repulsion.

The atomic theory of the constitution of matter, the conception of an interstellar ether, the undulatory theory of light and heat were all cast aside as useless and unworthy of notice because they were not directly observable and the senses unaided could not apprehend them.

According to Comte, the only object of science and philosophy is to observe, record and classify sensible phenomena. What could not be observed by the senses could not be known and did not exist. It is said the only open road to the advance of philosphy was thus forbidden by the man who made the first valuable contribution to its advancement.

Herbert Spencer first undertook the great task of discovering the unifying principle of nature. He recognized all possible phenomena as parts of one great whole, and held that all were united by natural law. He differed from Comte in that he recognized the imperceptible as a reality, but made no attempt to explain it or to bring it into harmony with the phenomena of sense, but designated it the unknowable. He divided his system into two general divisions—the knowable, which includes all things of sense, experience, and the unknowable, which includes everything else, or the invisible and imperceptible.

He held the knowable is the proper sphere of man's knowledge or philosophy, and the unknowable the legitimate domain of God and religion. And while he held that God and religion were imper-

ceptible and unknowable, he held they were none the less a truth of the highest degree of certainty. It is therefore well said that all who fear the downfall of religion as a result of the encroachments of science or philosophy may thank Herbert Spencer for placing it where neither science or philosophy can touch it.

Upon the law of relativity he places the basis of that which can be known, and that which cannot be known. He says: "We think in relations. This is truly the form of all thought. . . . . On analyzing the process of thought we found that cognition of the absolute—the unknowable—was impossible because it presents neither relations nor its elements—difference and likeness. Further we found that not only intelligence but life itself consists in the establishment of internal relations in correspondence with external relations. And lastly, it was shown by the relativity of our thought we are eternally debarred from knowing or conceiving absolute being, yet that this relativity of our thought necessitates that vague consciousness of Absolute Being which no mental effort can suppress."

It is apparent that these propositions contradict each other. For, if from the relativity of thought we are eternally debarred from knowing or conceiving Absolute Being, how is it that we have a vague consciousness of this same Absolute Being which cannot be suppressed? Consciousness is one form of knowledge. Spencer, thus recognizing the reality of the unknowable, regards that which is or can be known as different manifestations of the unknowable.

These manifestations he claims, as they appear in consciousness, pass through a double series. First,

a vivid series which includes all sense experience, and second, a faint series which includes thought, as in speculation and deliberation. Force, he contends, is the ultimate and deepest truth of the universe. All forms of consciousness, he says, are derived as experiences of force. All sense experiences as in the objective series, all subjective feeling or thought, everything known or knowable, is a manifestation of the one universal force or energy. This universal force, I contend, is, first, spirit or mind force; second, electric force controlled by mind force.

He says: "Contemplating pure force, we are irresistibly compelled by the relativity of our thought to vaguely conceive some unknown force as the correlative of the known force." This unknown or imperceptible force I contend is electricity and the mental force back of it. All our ideas of matter and motion, he says, are ideas of force. The demonstrated fact of the indestructibility of matter is but another name for the indestructibility of force.

The persistency of force means also the persistency of motion. All forms of physical energy—as light, heat, sound, electricity, magnetism, chemical action, gravity and sensible motion—he says, are different manifestations of force. In this I fully agree with him and claim these are all manifestations of the one fundamental force in nature—electricity.

He says: "Even after all has been said, many will be alarmed by the assertion that the forces we designate as mental come within the same generalization. Yet there is no alternative but to make this assertion. The facts which justify or rather necessitate it being abundant and conspicuous. All

the phenomena of mind belong to the same class—the phenomena of force."

In this I agree, and contend that the mental or spiritual forces are the most potent and supreme forces of the universe and control all other forces, physical and electric, and are the ultimate of ultimates.

He says: "The various forms of force are all changeable into one another." This is shown, he says, by the conservation of energy and the correlation of forces.

This accords with my electrical theory of creation, which holds that there is but one physical force in the universe—electricity—and all other forces, such as light, heat, physical life and so-called gravitation, are manifestations of this one fundamental force, and are all changeable or convertible into one another, and all controlled by the dominant force of mind or spirit. In other words, God controls the universe as man controls his body. Man controls his body by the electric energy that permeates his body and brain, and God controls the universe by the electric energy that permeates all matter and space, and which is subjected to His Omnicient Spirit and Omnipotent Will.

Herbert Spencer says: "An entire history of anything must include its appearance out of the imperceptible and its disappearance into the imperceptible. Be it a single object or a whole universe, any account which begins with it in a concrete form and leaves off with it in a concrete form is incomplete, since there remains an era of its knowable existence undescribed and unexplained."

The simplest statement of this fact, according to

my theory, is that all visible things come from the great invisible sea of electro-magnetism in which all things exist, which he calls the imperceptible, and are woven by magnetic attraction and the aggregation of billions of invisible atoms into visible forms. Then, after they have run their course as visible substances or organic forms, they are again dissolved back into this invisible sea of electro-magnetism. Just as water continually changes from solid and liquid to invisible vapor and back again, so nature continually renews and purifies her ever-changing molecules but changeless atoms, and builds up organic forms by magnetic attraction and dissolves them by electric repulsion. I contend that matter could be gathered into visible form in no other way than by electric attraction.

The life period of all visible things is while magnetic attraction has sway and is paramount; the death or dissolution period is when electric repulsion predominates. The blossoms and fruitage of summer are samples of magnetic life from the sun currents, while the decay of winter is a sample of electric repulsion and dissolution.

The law of incessant change, he says, must be the unifying principle which in its simplest form is "the redistribution of matter and motion." Again he says: "The progress from the most diffused and insensible state to that of concentration and definition is called evolution, and is attended by the dissipation of motion and the integration of matter." This I call the law of electric attraction. "The progress from the form of definition to that of diffusion," he says, "is called dissolution and is attended by an absorption of motion and a distintegration

of matter." This I call the law of electric repulsion.

"This," he says, "is the universal law of evolution and dissolution in its simplest form." And I say that the law of evolution and dissolution in its simplest form is the law of electric attraction and repulsion.

Mr. Spencer's definition is complicated, but his process is substantially correct. Yet he offers no explanation of this natural and universal process, while my electric theory of creation does, and makes his universal evolution and dissolution simply universal electric attraction and repulsion under the well-known laws of electro-magnetism. This is a great advance, a gigantic step toward the explanation of the universe. The simplest illustration in physics explains both theories. For instance, dry steam, he says, will condense to its liquid form, water by permitting the dissipation of its internal motion in the process of cooling, and a further dissipation of internal motion of the water will reduce it to a solid form, called ice. This he calls evolution, but he does not state what produces it. I say it is produced by electric attraction.

Then he says the mass of ice thus evolved from impalpable vapor may be set out in the sun and gradually melt, by the absorption of motion from the sun, into water, and a further absorption of like motion will convert it into invisible vapor. This he calls dissolution, but does not explain it. I say it is the result of the law of electric repulsion.

He speaks of the absorption of motion. I contend there can be no absorption of motion, but only an absorption of that which produces motion, which

is electric energy, from the sun—the electric heart of the solar system. Motion, I contend, is not a cause but an effect, and all physical motion is the result of electric energy. And to say with Tindall, that light and heat is a mode of motion is to state an absurdity, for motion is the result of some force operating on matter. It is not a cause but an effect produced by a cause.

I explain force and "the redistribution of matter and force" as the product or the result of the universal laws of electric attraction and repulsion, which control atoms, suns and worlds and all matter in body and space.

Mr. Spencer offers no explanations and relegates all to the convenient dumping ground of the unknowable. What he calls "The realm of the unknowable" I call the electro-magnetic sea of ether in which all things exist and from which all things are evolved, which is the imperceptible elements of the universe in solution. This I claim is the fourth form of matter, the invisible primary essence of all visible creations.

I state his law of the redistribution of matter and motion in this way: An increase of electric energy produces an accelerated motion of the molecules of a body or substance, and, if continued, tends to its dissolution by electric repulsion; while an increase of magnetic attraction decreases the activity of its molecules and tends to integration or solidity of form or substance.

There is no such thing as heat in reality; heat is accelerated motion, a sensation caused by the increased activity of the molecules; while cold is the absence of motion or heat.

Mr. Spencer has described a general indefinite process as "the redistribution of matter and motion," but he has revealed no natural law, or fundamental explanation of natural phenomena. Every important question leads him to a stone wall which he does not try to scale or penetrate, but labels the "Unknowable."

A learned philosopher who has spent his life endeavoring to instruct others should not fall back into the convenient ditch of the "unknowable."

He says: "What is it that holds together the parts of which this ultimate atom may be imagined to consist? The only answer is a cohesive force." But he does not attempt to explain what that cohesive force is, while I undertake to say it is magnetic cohesion under the law of electro-magnetism, which holds aggregations of atoms in organic affinity, producing visible form and substance.

He says: "Force is the ultimate of ultimates. Matter and motion are only different manifestations of this unknowable force."

This is making force usurp the place of Deity. Force is a servant, not a master—a tool and not an ultimate cause. Force without intelligence back of it is anarchy and ruin; it is chaos and not a cosmos. God is a scientific necessity.

The ultimate of ultimates is mind or spirit—the eternal intelligent spirit of Deity and man.

I accept the scientific postulate that the conservation of energy and the correlation of forces affirm, first, that there is but one kind of energy or force in the physical universe; but I go further and contend electric energy is that force. Second, that, like matter energy cannot be created or destroyed. Third,

that energy appears in a variety of forms as motion, heat, light and so-called gravity and chemical action. Fourth, that these forms of energy are interchangeable—any one form may change into any other form, and all are transformations of the one ultimate force I term electricity. Fifth, that there is nothing in science to show that mind or spirit ever changes into physical energy, or force into mind or matter, or either into the other. This destroys the doctrine of monœcism, or all things from one substance. And Haeckel will have to produce more facts and logic than he has yet set forth to prove that spirit and matter, force and matter are all one and the same thing or substance.

The psychic or mental force is the paramount force, and the true realm of evolution belongs to the mental or spiritual universe and to organic nature. Physical changes are not evolution in the highest sense except as they are the result of spiritual power and unfolding intellect. The highest sphere of evolution is in biology and psychology.

There *is* matter, mind and force. Materialism is a shallow, one-sided doctrine; and the opposite extreme, that there is no matter, nothing but mind, is also shallow and one-sided. These three separate entities maintain their separate and distinct existence. The electric theory explains and elucidates all natural philosophy and all material phenomena, and is as a scientist has well said, "the best exposition ever offered of the physics and metaphysics of the universe."

In regard to another phase of natural philosophy, Kant proved that in our experience objects can be known only in relation to a subject, and matter only

in relation to mind. From this it is evident that mind is at least co-ordinate with matter and cannot be treated as a mere property of matter. From this doctrine Spencer took refuge in the strange notion that we possess two consciousnesses, the consciousness of ideas within us and the consciousness of motions without us. That neither of these could be resolved into the other, though both were the phenomena of an unknowable absolute. This self-contradiction of a dualistic separation between two aspects of our life, which as a matter of fact can never be divided, proved a citadel of ignorance which could not withstand the attacks of logical criticism.

Mr. Spencer's agnostic dualism of objective and subjective mind was due to a fundamental misconception of what is meant by the subjectivity of knowledge. If we have the consciousness of object and subject only in relation to each other, it is not necessary to seek the principle of their unity in any third principle, for his unknowable absolute is "in our mouths and in our hearts," and found in the inseparable unity of experience in which the inward and outward are correlative elements.

It seems Mr. Spencer's agnosticism is a sort of spiritual refuge for the destitutes who renounce their heritage like Esau or waste it like the prodigal son, and feed on husks. For those who by their abstractions separate the elements of experience from each other, are forced to go beyond experience for the unity they have lost, and flounder in the miry bogs of agnosticism.

The true way is to give up such abstractions as objective and subjective mind, for the mind is a unity, and learn to "think things together" and

recognize the organic relation of the inner and the outer life and "explain the parts by the whole, and not the whole by artificially severed parts." This organic unity of mind in man is illustrated by the organic unity of the universe, which, under the electric theory of creation, is a vast electric organism bound together by invisible electric bands, where every atom has an individuality manifested and explained in the harmonious unity of an ever-changing but indestructible universe.

As man is capable of knowing all things, he cannot be identified with any of them, or if as an individual he is so identified, he has within him in his spiritual nature that which carries him beyond the limits of his individuality. In his inner moral life man is revealed to himself as a free-will agent, a great and self-determining being, conscious of being subordinated only to the law of duty, which is the law of his own reason.

That law, in spite of every outer pressure, he knows he *ought* to obey, and therefore knows that *he can* obey it. Thus man is both natural and spiritual; he is limited to a finite personality, yet possesses a universal capacity for knowledge and an absolute power of self-determination. Human reason with one voice seems to depress man to the level of an animal, and with the other voice proceeds to elevate him to the theatre of all life and being, as a "spectator of all time and existence," gifted with absolute freedom of will and conscious individuality. There is an identity which is below or above all distinction; and the universe is one through all its multiplicity and permanent through all its changes. The unity beneath all differences, the priority of the

universal to all particulars, is necessary to the true conception of the organic unity of the world. All opposition of thought and things are relative oppositions which find a solution in the life and movement of the whole. In all the great controversies that have divided the world the combatants have really been co-operators. They developed truth and unity.

We do not see anything truly until we comprehend it as a whole, and see it in all its relations to the universe. Everything so far as it has an independent, individual existence at all is an organism. While conceiving the universe as organic, Hegel maintained that it "is not a natural but a spiritual organism." For the limited scope of a natural organism and its process cannot be regarded as commensurate with a universe which comprehends all existence, whether classed as organic or inorganic. Only the conscious and self-conscious unity of mind can overreach and overcome such extreme antagonisms and reduce them all to elements in the realization of its own life.

The natural universe, I contend, is an organism which includes nature, but manifests its ultimate or highest spiritual force only in the life of man. The universe as an electric organism obeys the higher supreme spiritual forces. It is said that "Hegel was only working out in the sphere of speculative thought what Christianity had already expressed for the ordinary consciousness." Nearly all great thinkers, I contend, reason forward or backward to the fundamental truths of the Bible, only expressed in a little different way, and which is the old familiar process in human history of "pouring old wine into new bottles." Hegel sought to show how an ideal-

istic view of the universe and human life could be maintained consistently with the fullest recognition of scientific methods and results. This was an attempt at the reconciliation of science, philosophy and religion proceeding from the growing prevalence of that harmonizing spirit which seeks to do justice to the results of scientific investigation and at the same time give them a new and enlightened interpretation. In this he was right. The main conflict in philosophy as in religion has ceased to lie between materialism and idealism or spiritualism, but rather between Herbert Spencer's "Vague Consciousness of the Absolute," which he bids us worship, and that faith which enables us to pierce the veil of the phenomena and grasp the ultimate reality of things. Philosophy, therefore, is always toiling after the intuitions of faith as "cities of refuge." All philosophy can safely maintain that "what is rational is actual, and what is actual is rational." And all accord with man's highest inspirations of spiritual faith and hope. And the electric theory of creation is the most rational explanation of an organic universe evolved and controlled by natural law which is the will of Deity, whereby spirit intelligence controls by electric energy all the forces and manifestations of visible creation.

Herbert Spencer has done a great work for science. He has been a great champion and expounder of evolution, and the laws of the material universe. And while he has been a great agnostic on religious subjects it is because he is a spiritual non-conductor.

Man is like a wireless telegraphic receiver; he draws only that which corresponds to his nature and character.

Different men have different casts of mind and different natural aptitudes. Some are natural receivers of truths, and others are natural non-conductors of certain truths.

There are two eminent illustrations of this fact, it is said, in the immortal Sir Isaac Newton and John Milton, whose names are equally historic and illustrious for their learning and culture. For it is said that Newton could not appreciate "Paradise Lost," and Milton could see nothing in "The Principia." This was not to the discredit of either of these books, nor was it a reflection upon the technical learning of either man. Neither was attuned to the message which the other brought to humanity and it proves that in order to apprehend truth in any quarter a man must be sympathetically disposed toward it.

Milton had no mind for mathematics, nor Newton for poetry. So the wisest philosophers like Herbert Spencer may go to religion and find nothing there but the abstruce and unknowable. Spencer's mind dwells on the phenomena of matter and material senses only. It is said nearly every great thinker has some central thought fixed firmly in his mind. The central thought of Plato is the theory of ideas —the assertion of the apparitional character of the seemingly real world. The central thought of Pascal is that of human intelligence confronting the universe and strangled by it inexorable tragedies. The central thought of Schopenhauer is the absurdity of life, and the central thought of Herbert Spencer is the evolution of the material universe.

PART SECOND

Sleep, death and oblivion are things that mock;
  Sleep in dreams; death and oblivion in the grave;
And yet we are not mocked. We only walk
  Amid realities that bind us like a slave.
Sleep soothes and cheers; death grimly reaps and slays.
  It makes earth but a tomb—its house of revelry;
It stalks amid life's dark and brightest ways
  And takes its victims. All are 'neath its slavery.
With chilling frosts it nips life's brightest flowers,
  And with pale faces and a gasp they go,
And vaguely trust to bloom 'neath other bowers,
  Where death's grim hand will never blast them so.

All hearts beat to music and measure,
  Like songs of the spheres as they roll,
And from dreamland's far mystical treasure
  Come songbirds that sing to the soul;
Where the glint of the gold in fair tresses
  Hide a face that we never have seen,
And the infinite hope that caresses
  Kisses joys that we never may glean.

For the wealth of the world is ideal;
  There is bliss in the beauty of rhyme,
And the thoughts of the soul are the real,
  Outlasting the cycles of time.
And the soul is the diamond eternal
  Where spirit and power are one,
Brushing dross from its splendor supernal
  As dust from the eye of the sun.

All life is a poem of glory;
  Neither reason nor senses can grasp,
Till we read every verse in the story,
  And the hand of the author we clasp.
Then sing on sweet souls as of olden,
  With visions of soul-land that shine,
Till the harp of the earthly is golden
  From the hand of the Author Divine.

CHAPTER XI.

SCIENCE AND PHILOSOPHY SUSTAIN THE RELIGIOUS CONCEPT

I CONTEND that science, philosophy and electric evolution sustain the religious concept.

The infinite and eternal power that animates the universe must be psychical in its nature, and any attempt to reduce it to mechanical force must end in absurdity. The only kind of monism which will stand the test of an ultimate analysis, says John Fiske is monotheism. The highest development of psychical life is the end for which the world exists. To the materialist the ultimate power is material power, and psychical life is nothing but fleeting colocations of natural elements in the shape of nervous systems. The psychical nature of God and the immortality of the soul harmonize infinitely better with cosmic philosophy. Prof. John Fiske says: "Evolution brings before us with vividness the conception of an ever-present God, not an absentee God who once manufactured a cosmic machine capable of running itself. It makes God our constant support and nature His revelation, and when all its religious implications are set forth it will be seen to be the most potent ally Christianity ever had in elevating mankind. The progress of evolution now is to bring out the higher spiritual attributes and to set the whole doctrine of evolution in

harmony with religion. Then, the assumption that underlies all religion must be true—that what we see of the present life is not the whole thing; that there is a spiritual as well as a material side of life; in short, a life eternal.

"In the whole history of evolution," he continues, "when we see an internal adjustment reach out towards something, it is in order to adapt itself to something that exists. And if the religious cravings of man constitute an exception they are the only exception in the whole process of evolution." This is an argument of stupendous and resistless weight. This puts evolution in harmony with religious thought, and the great religious drift of humanity in all ages, and removes the antagonism that used to appear to exist between religion and science.

The French materialists of the eighteenth century virtually declared: "We content ourselves with what we can prove by the methods of physical science and we will reject all else." But think how chaotic nature was to their minds compared to our present conception, and how different the universe they saw to what we see to-day. And it is not to be wondered at that there was antagonism between science and religion. Anaxagoras maintained that the human race would never have become human if it were not for the hand, and John Fiske says, "*man never would have attained his present psychic powers but for religion.*"

This is truth well stated, and the fact that man is the only creature that has a hand, an articulate voice and an aesthetic nature that is never satisfied, is strong proof that man is infinitely more than a mere animal, or a transient animate ma-

chine. The higher intellectual powers were dwarfed in the middle ages, when human life was made hideous by famine, pestilence, perennial warfare and bloody superstitions, fear of witchcraft and eternal torments, and men endured it because they had no experience of anything better. But the change wrought in six centuries is amazing, and shows that human genius and man's possibilities are beyond our comprehension. The genius of Aristotle proved that the earth is a globe, that of Copernicus showed that it was one of a system of planets, and that of Newton undertook to explain the laws and dynamics of this marvelous sun and world system.

Belief in God, and the immortality of the soul, and the compensations of a future life tend to maintain social order and moral rectitude, by enabling men to endure the trials and injustice of this world in the hope of ample compensation in the hereafter. Man steps forth on this revolving globe not of his own volition, but is sent here by some mysterious power on some inscrutable mission to fulfill some divine purpose. He comes as a spiritual wayfarer under sentence of death. Not death to the spirit, but to the transient habiliments of earth-dust he gathers round his invisible spiritual form. When he arrives and gathers his reasoning powers to scan the narrow horizon of his life, he is beset by perplexing problems of poverty, disease, sorrow, sin and death. The "slings and arrows of outrageous fortune" often overwhelm him, and he discovers at last that the law of life is the law of growth and development; and all these struggles and trials are intended to evolve character and purify and ennoble

the soul. That this is the seed time and nursery of existence preparatory to the harvest of eternal life when he shall drop this overcoat of atoms and be transplanted to the self-luminous bosom and unfading joys of the perfected and celestial sun-worlds. Here he sees incompleteness, fragmentary careers, tragedies, injustice, griefs and farewells, and he hungers for knowledge. His quenchless spirit seeks to penetrate the mysteries of the universe, and comprehend time and eternity, and in agony of soul he asks the age-old question, "If a man die, shall he live again?" Then, if he turn not to the pages of sacred writ for an answer, he will find written on the living pages and animated forms of all nature the promise of another life. He will find it in the returning verdure of spring, in the unfading light of the eternal stars, in the ever-changing beauty of the bending skies, in the mysterious impulse of the untaught birds of the air who start on their vast migrations from the frozen seas of the north to the summer-lands of the sunny south; in the tropic fish, who seek their spawning nests in the clear, cool rivers of the north. The bear and lion, the tiger and elephant, the bees and the insects of a summer day, all have the longings of their natures satisfied. Why should man be an exception? If the Creator of all keeps faith with all other creatures, why not with man?

"As something must have been eternal," says Prof. Wright, "it is easier to suppose it was an intelligent, designing mind which was uncreated from the beginning, and which has brought the universe into being with all its uniformity of laws and complexity of adaptation than to suppose that the eter-

nal substance was matter out of which has come the orderly universe as we know it, with its high grades of intelligence in animals and man.

"The world, as the creation of a supreme intelligence, is partially comprehensible to finite minds. But to suppose that the thought and purpose and will of man are products of material forces is not only a mystery, but an absurdity which cannot long be entertained by any sane mind. The theory of evolution without a God can lay no claim to scientific support. A theory of evolution, designed, controlled and permeated by divine ideas, may be both scientific and in accord with the highest dictates of religious truth."

As to the life hereafter, which the religious concept has always proclaimed, it is a fact demonstrated by history that in all ages, among all people, under all religious forms, the idea of immortality remains fixed and imperishable in the human mind. Every human being in coming into this world brings with him under a form more or less vague this inward belief, desire and hope of immortality. This is God's handwriting on the human soul. And the history of man, the reasoning conscience of man, is God's Bible of life written in man's spiritual nature. And whatever is rational, true and good is of God, and whatever is contrary to the enlightened conscience of man is contrary to the divine purpose of God.

Revelation proclaims God is a spirit and man is a spirit, and after death man in his spiritual being shall live on forever. The latest modern scientific thought fully and powerfully sustains the Bible. It says in substance, in dealing with man we must

deal with him as a spiritual being; we must go into a realm that brings us within the sphere of the electrical and magnetic relations of the elements, but on a different plane. First, matter in the invisible world has the same essential basis of formative power so potent in the more tangible relations. Second, the invisible atoms there obey the same essential principles that in a lower grade of activity give visible results. Third, there must be a direct connection between the two conditions of being—the visible and the spiritual—as to be axiomatic. Fourth, there must be a secondary form of the invisible elements ere they assume the visible relation, which is a chemical or electric necessity. In all life this law is absolute. Fifth, in applying this principle to the process of the evolution of man's form we have an explanation of how it must be a natural product of evolutionary life, and that man must follow the same law as the evolution of all spirit that pertains to planetary life. Spirit holds visible things in form by its connection with the magnetic life of the planet. It is the controlling power in shaping the form and organism to correspond to changed conditions. The material form can only exist by keeping itself in harmony with the laws of the elements in the planet, and as long as the planet endures the electric form in man and the electric or instinct form in animals within the radius of its magnetic aurora must exist as a secondary satellite, or miniature concrete expression of the forces in the planet. This principle may give the electric form immortality, and, by reason of the eternal nature of the elements composing it, place it beyond the

possibility of dissolution as long as the planetary relation of the elements exists. But with man it goes even further, for the spirit form, having the basic principles of eternal existence in its spiritual composition and having once entered upon organic life, has in itself immortality and the power of self-sustenance from the elements in space and cannot become disintegrated, for it has all the necessary material to keep it in eternal existence as an organism, though the planet should revert to its original status and vanish as a distinct form. This explanation of the nature of spirit gives us a logical ground for the rational consideration of the phenomenon that has been the basis of all the superstitions embalmed in the sacred and curious literature of past ages. That man and probably all types of life have a spiritual or electric counterpart is not a scientific speculation or hypothesis merely, but a logical sequence of the forms that enter into physical organization.

Here in the secondary form, says the author of "Planetary Evolution," is an explanation of the nature of spirit that follows the same principles that construct the physical body and form the same material environments. And the questions of a spiritual life, apart from this principle of a secondary form, cannot be solved by any known formula of a scientific character. On the other hand, the existence of a form holding the powers of thought and action upon the plane of radiant matter gives a satisfactory explanation of the transference of the mental powers that belong to planetary life. The law of correlation and conservation of force prevent their annihilation, and they must exist

somewhere. They are a spiritual entity, but should not be regarded as having a supernatural origin.

"The spirit is an evolution of planetary life and cannot be destroyed, and it is natural that its mental attachments to the planet should bring it in contact with the mental development generated there. The spirit would have the power of thought and consecutive reasoning as much after its transition from mortal life as before, but it would lack the power of expression through ordinary channels. It would, however, have the power of inductive electric transfer of thought, and, coming in contact with a spirit embodied, this power of induction would excite the elements in the spirit embodied to equilibrium of mentality, which would give rise to a similarity of thought in both." And here lies the foundation of the doctrine of inspiration which is a process of mental action whereby the mind in the body is raised to a perception and expression of ideas beyond its own range of thought as generated by the physical senses. The result is the upbuilding of the brain organ and the uplifting of the mentality to the purely spiritual plane, and man has thus, by the aid of the spiritual powers, made another stride forward in the domain of spiritual evolution. And man is a spiritualized being with brain organs adapted to the expression of ideas that respond to the spiritual state of life.

It is sometimes assumed that a man cannot be a Christian and a man of science; yet there have been many men of science, from Newton to Lord Kelvin, who were devout Christians. It is also assumed in some quarters that an educated man cannot believe in miracles, or answers to prayer, or special provi-

dences. But this is not a fair assumption even from a scientific standpoint. Science affirms the universality of energy and law; Christian theology accepts this fundamental postulate of science and says it is the result of universal spirit and will, or Infinite Mind and volition, which is back of universal energy and law. Energy is spirit and will at work; law is the mode of work. Energy and law are derivative, spirit and will is the primary and ultimate force of the universe.

But says the unbelieving scientist, "I accept energy and law as facts, but do not see that spirit and will are facts." Christianity replies: "You mean by 'see,' mental sight; for in the physical sense you can no more see energy and law than you can see spirit and will, or mind and volition.

"The fact is, science is a search for the invisible or supersensible—for that which lies beyond sense and vision. You call it energy and law, which we say is a result and not a cause, and point to spirit and will, which is the primitive, ultimate, first cause of universal energy and law.

"Would you feel it a just description of yourself if you were described as nothing but a system of energy and law. Energy is action according to law. But there is psychical energy as well as physical energy, or 'a double faced' unity—psychical on one side and physical on the other. Thought, feeling, volition are all species of energy subject to laws of their own. And, what is most wonderful, while they are invisible and intangible they control all physical energy in man and all animal organisms, just as universal spirit and will or volition control all energy and law in the physical universe.

Then, is universal energy and law psychical or physical? If it is intelligent and works according to design and purpose with beneficent uniformity it must be psychical, and all physical energy and law is but a manifestation of spiritual energy and purpose."

Then says the scientist, "there may be intelligence without physical organism, and man may be in constant contact with the spiritual world. But I am an organized being and cannot imagine how unorganized beings could communicate with me even if they wished to do so. I cannot imagine it as possible that I could know God, who is a spirit."

But Christianity answers, "suppose you are not matter only, but that you are a spirit also, and a spiritual atom of that universal spirit which controls the universe, then could not spirit communicate with spirit? Thus, you say, all science is founded on energy and law, which necessitates spiritual intelligence and will for its foundation, and consciousness for its evidence. Thought, feeling volition are forms of psychical energy. We are conscious that we think, feel, will; and as consciousness is a mental or spiritual perception, man must be a spiritual being. Then we are not far from Theism—for God is a spirit. Besides energy and law we have consciousness and spirit, and no force without will. Law is simply the mode in which will works. Law stands for the regular and steadfast operation of will, as opposed to variable or capricious action. The uniformity of nature is rooted in the faithfulness of God, which sustains the steadfast operation of natural law.

Then says the scientist, "there could be no mira-

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cles, or answers to prayer, or special providences, for these imply interference with law, which would mean inconsistency on God's part and confusion on ours."

But Christianity answers, "interference with law is of continual occurrence. You cannot stand up or walk, or so much as raise your hand without interfering with the law of gravitation or attraction. We can modify or direct the action of forces without violating their laws. Violation of God's laws on God's part would mean inconstancy. Direction of his own energy to any point He wills—as in evolution, for example—is no violation of law; neither are what are termed miracles, special providences and answers to prayer violations of law, but evolutions in accordance with law, as law stands for God's mode of working in the control of the universe."

Then says the scientist, "I cannot reconcile the two ideas of 'infinity' and 'personality.' Personality implies limitation; infinity asserts absence of limitation, a being cannot be at once limited and unlimited."

"But why should we suppose personality to involve limitation?" says Christian theology. "Even in man the essential idea of personality is not limitation. Personality in philosophy and theology refers not to the body but to consciousness and will. What difficulty is there in believing that the Infinite God is infinitely conscious and volitional and therefore personal."

There is a mighty force in the material metaphors of the Bible, but these all stand for spiritual realities, and its fundamental postulate is "God is

a Spirit," and "God is Love." As man is a spiritual atom of deity. God has spiritual contact and influence with his spiritual children and they are "moved by the Spirit," and "born of the Spirit," as they accept and obey that spiritual influence which leads to righteousness and truth. Religion cannot exist without spirituality and the religious concept. God has so constituted the human soul. Without religion the soul could not dream of heaven nor feel the sweet whisperings of faith and hope. Neither could the heart thrill with spiritual joy and truth. Without religion the heaven-bound spirit could not soar to the altitudes of celestial bliss.

Without religion and ideality there would have been no gems of art or literature, no beautiful pictures, no living statuary, no lofty temples or inspiring thoughts. The grandeur of Shakespeare, the sublimity of Milton, the poetry of Byron, Burns, Tennyson and Longfellow, the romances of Scott, Dickens and Hawthorne, the noble architecture of Michael Angelo, the statuary of Phideas, Praxatelles and Canova, and the pictures of Raphael, Murello, and Reuben had never been known. Ideality is the father of beauty and the inspiration of all genius, goodness and nobility and the twin brother of religious hope and faith.

Without religion ideality would be a mockery and a dream, hope would be a delusion and a snare, inspiration would wither, like Jonas' gourd, in a night, and the mildew of selfish materialism would convert the verdure of earth into deserts of despair.

John Fiske well says, "Man never would have attained his present psychic powers but for religion," and without religion ideality would never

have soared to her lofty heights or brought forth her beautiful thoughts, her lofty conceptions, her sublime dreams of joy, or her noble gems of art, poetry, sculpture, architecture and literature. Remove the twin brothers—religion and ideality—from the earth, and its glory and worth would shrivel like a withered flower. Its hopes and joys, its dreams of peace and love, of paradise and heaven, would vanish into the desolations of a boundless Sahara, heaped with the burning sands of doubt and scorched by the withering blast of despair. The religious concept is the pilot of the soul to the fair field of heaven, the communion with the Father of the spirit, and ideality is its companion and servant who carries its cloak and staff as they journey along the pathways of earth and the highways of eternity. Science and philosophy, ideality, love and hope and all the aspirations of the human soul sustain the religious concept. It is a scientific postulate imbedded in the nature of man and in the basic law of the universe. Ideality and religion are the most powerful forces in uplifting humanity. The sublimer the ideal the more potent and ennobling its influence on the human soul. Though millions grasp not its sublimity and truth, those receptive souls nearest the light will catch its divine illuminations and reflect it to those below. And gradually those below will grasp its beauty and truth and step up higher, and each in succession, step by step, will advance to "a higher plane and a broader view," and this is growth and progress toward perfection.

The ultimate aim and purpose of creation is ideal perfection. This purpose is written in the funda-

mental law of evolution—progress from the lower to the higher and the survival of the fittest. The higher, the more sublime, the spiritual truth, though it be ages in advance of the world's comprehension, yet its brightness and power will penetrate the darkness, and scintillate from soul to soul, as the sun gleams from atom to atom, until at last all humanity is illumined and exalted. When we go down into the darkness and poisoned vapors of a dungeon we seek for a ray of sunshine as we seek for life and light, and we are cheered by the smallest sunbeam which enters through a crevice, for in its silvery thread of light little atoms float like miniature stars, dispelling the desolation. There at our feet, left to decay and perish, may be the seed or bulb of an insignificant vine or flower, forgotten by the busy world of conflicts without, where little men become great and great men become little, not dreaming of the eternal law of life and hope that thrills in every throbbing atom and electric germ in this life-evolving magnetic universe.

But there in the darkness of that dungeon a struggle for life and hope goes on as important to the life involved as that of building a throne or destroying an empire. Never did a hero dare or a nation fight more bravely to attain its aspirations than did that little seed or bulb lying in the darkness. A slender beam of light gives it a hope of escape, and, cold and chilled, its prayer for life has slowly evolved a delicate pale vine which creeps toward the sunbeam.

Each day it has seen that beam of light fade and pass, and darkness and mildew paralyze it into the stupor of unconsciousness. And again that sun-

beam awoke it to consciousness and life. At last it reached the crevice whence came the light, and, lifting itself as a prisoner escaping from death, it springs forth into the sunshine and opens its blossoms of beauty and perfume to greet and gladden the world of light and life.

Thus has humanity struggled for light, and toiled for hope and joy and sunshine through a thousand ages of gloom and chilling mildew of ignorance and darkness. And wherever a gleam of light and truth has pierced the shadows of life's struggles and tragedies, like the tiniest seed or fragile vine, the aspirations of his nature and his longing soul have reached up toward it.

What the ray of light is to the flower seed in the dungeon, religion is to man. Wherever man has crept, like the vine, in the darkness, towards the light it was his religious spiritual nature and aspirations which led him. Truth, which comes from the bosom of the eternal Good, streams down into the darkness and lifts man's soul up into the light by the same law that the flower and the vine seek the sunshine, and all true science and philosophy sustain the religious concept.

Life seems of little value when men of every nation are armed to the teeth to slay each other like madmen, as the best way in which they can show their gratitude to nature for the useless gift of life. But they are not so anxious for war and bloodshed as their preparations would indicate. And the World's Peace Conference at The Hague, and recent arbitration of national questions, mark a new era in the world's history, and indicate a disarmament of the nations in a few decades. The fear of death

is useless and absurd. As Flammarion has said, there are only two sides to the question. When we go to sleep at night there is always the possibility that we may never awaken. Yet this thought does not prevent us from falling asleep. In one case, suppose death to end all; it is but an unfinished sleep to last forever. In the other case, should the soul survive the body, we shall reawaken in another world to resume the activities of life. In this case the awakening must be rather delightful, as every form of life and every creature finds its happiness in the exercise of its natural energies and faculties. The deep study of this important question and the disgust at the indifference of men to this great problem of human destiny impelled a great student of science to attempt suicide. Because he saw everywhere people absorbed in their material interests, accumulating wealth, consecrating their lives to Mammon, folly and passion and neglecting their nobler natures, it made him doubt their fitness for an eternal existence, and he determined to know the truth at once by plunging into the invisible unknown.

Prof. Albert H. Walker, in a recent lecture—May, 1903—makes a new distinction in philosophy and religion, when he says: "Two systems of philosophy will divide the attention and adherence of the people of the twentieth century. One is the old system of Epicurus which long preceded the rise of Christianity and which underlies the Declaration of Independence; and the other is the philosophy of Christian science."

His definition of religion and Atheism is something modern and unique. He says: "I define religion as belief in a God who cares; and Atheism as

lack of belief in a God who cares. These two definitions, if correct, divide all men into two classes, and, according to this classification, most of the men in the United States are Atheists." He seems to think all men believe in a God, but a majority believe in a God who does not care, and that is Atheism. An Atheist has always been defined as one who believes there is no God; now they may believe in a God who does not care. This is not a very bad distinction and may be the true one in the future. For modern knowledge and culture forbids any thinking man from denying the existence of a God, and this may compel modern Atheism to modify its creed and accept a don't-care God.

He thinks this century may find an answer to the immortality of the soul, and "it may be in the affirmative through actual communication with departed souls; or in the negative by scientific demonstration that the spirit or soul of man is only a name for the electrical and chemical actions and reactions which occur in the body." He also says: "The twentieth century may show whether there is a great master hand that sweeps over the whole of this deep harp of life, or whether men are but pipes through whom the breath of 'Pan doth blow a momentary music.'" Religion has nothing to fear from the future; materialism is vanquished and now Atheism must change its creed.

Canon Farrar says: "Let us think noble thoughts of God and break through the brain-spun meshes of impotent negations. God is not vortices of atoms, or streams of tendencies, or earth fermentations. Heaven is not a vacuous eternity, or a future of ceaseless psalmody."

The Greek had his Elysian Fields, his daffodil meadows where the Eidola, the shadowy images of the dead, moved in a world of shadows; and his islands of the blest, where Achilles and Tydides unlaced the helmet from their flowing hair. The Scandinavian dreamed of his green sylvan paradise hereafter, amid the barren wastes. The Indian saw God in lightning, heard him in the thunder's roar, and viewed beyond the cloud-capped hills his hunters' paradise. And in the perennial hereafter in the all-life-giving sun there are green fields, daffodil meadows, golden light, rainbows that never fade, glorified cities, white-robed innocence, the crown and the palm branch, the throne of serene majesty, the golden harp and the song of rejoicing, and all-abounding happiness, innocent, thrilling, intense and unending.

The rare and radiant physical beauties of heaven we cannot describe, but it is a place where no guilty step enters the gates of pearl, in the city of God; no polluting presence flings shadows on the golden streets of the New Jerusalem. It is the dwelling place of angels and just men made perfect, and spirits of saints in celestial glory. There is no darkness, envy, hatred or slander, no gold mixed with dross. No bleared and blighted crowds, degraded out of the semblance of humanity, crawl, like singed moths, around the flaring house of multiplied temptations. Where boyhood shall not so live as to make its own manhood miserable; where manhood shall not so live as to make old age dishonorable and death ghastly. The apples of Sodom cannot grow on the same soil with the Tree of Life.

In other stars and countless worlds there may

be work for us to do. What radiant ministrations, what infinite activities, what never-ending progress, what immeasurable happiness, what living ecstasies of unknown raptures may surround us in the beauty and loveliness of the land of the leal, in the life supernal?

Heaven is not a reward but a continuity, not a change but a development. It means a place of love and goodness where we are one with God and playfellows with the angels. Present science would change God into a struggle of careless forces or a complexity of impersonal laws. Let us reject the Chinese idea; they believe in God, but worship the devil, because they think the devil's rule predominates.

Let us discard the pagan *deification of annihilation*, and the modern agnostic's plea for *suicide*, and the Greek poet's pessimistic postulate: "It were best never to have been born, and next best to depart as soon as possible." Let us grieve at the dark shadows flung by theologians athwart God's light upon those who believe that human reason, conscience, and experience, as well as Scripture, are the books of God. Phrases which belong to metaphor, to imagery, to poetry, to emotion should not be formulated into dogmas, or crystallized into creed.

Discard the tyrannous realism of ambiguous metaphors, the asserted infallibility of isolated words. Canon Farrar says: "Erase from our Bible the erroneous disputed renderings of the three words, 'damnation, hell and everlasting.' Not one of these three expressions ought to stand any longer in our English Bible."

He says further: "There has never been a human being yet since time began, however beautiful, gifted, bright with genius, or radiant with fascination, who has sinned with impunity." Evil and punishment, as Plato said, walk this world with their heads tied together, and the rivet that links their iron link is of adamant. It needs no lightning stroke, or divine interposition, no miraculous message to avenge God's violated laws. They avenge themselves. The hell fire of the Bible was a spiritual fire which does not burn the flesh, but purifies the spirit. Not a material fire, but self-kindled fire, an internal fever—in fact, remorse for remembered sins—a figurative representation of a moral process by which restoration shall be effected.

When earthly life vanishes and we see in the visions of the soul an endless life and being in countless worlds of destiny, death has no terrors. The thought of the pale, cold body enwrapt in its winding sheet, coffined and alone in the narrow grave, its last sad dwelling place, with the grass growing above, where the lonely cricket chirps through the silent night, does not disturb the calm and reasoning soul. A few years hence and we shall all cross the dark river to the shadowy unknown shore and learn the mysteries that lie beyond. But where is that wondrous shore, and where will all of the now living inhabitants of earth be a century hence? Not floating in the marvelous belt of atmosphere which surrounds the earth. Nor on a changeful planet like our earth. Not floating in the frigid ether of space, but, if my hypothesis is correct, they will be celestial residents in the self-luminous, all-life-giving sun.

The only rational scientific theory that satisfies my mind is to regard the suns as self-luminous, perfected worlds, the visible abode of deity, and the future home of the soul. This hypothesis accords with every recently established fact in science, nature and revelation. It fits man's hopes and aspirations, his aesthetic nature, his psychic powers and religious concept which have followed him through all the vicissitudes of his history.

The question often arises: As justice reigns in the moral world, as equilibrium reigns in the physical world, and the destiny of the soul is the result of its aptitudes and its aspirations, are only those souls alone that truly live and unfold their faculties and aspire to knowledge and truth destined to a conscious immortality? Many souls pass their lives here in mental sleep, intellectual stupor, and spiritual paralysis. Will they receive the gift of eternal life? Many great scientists think they will not. And all who neglect their mental and moral development seal their own fate and will have no future existence. This is a distressing view held and championed by some of the able minds of modern times. But I do not agree with them, for I believe every soul is a spiritual atom of deity and, however ignorant and depraved, may become wise and good, and enjoy the beatitudes of an immortal existence.

CHAPTER XII.

HUMAN REASON AND THE UNIVERSE ARE BOOKS OF GOD, AS WELL AS THE BIBLE.

It is a mistake to consider the Bible as the only book of God and its revelations the only revelations of Deity. The natural universe and human reason are also books of God. They are books He has been writing all along through the varied history of man and the universe, from the dawn of creation until now. Man is God's handiwork, His most perfect and finished product, a machine he has been developing and improving through all the ages, a book that He has bound and rebound, and stamped upon it His name and title a million times.

The Bible teaches this when it says, "Ye are His epistles known and read of all men." He has named this book, this living epistle written by His own hands, "The Sons of God," "Children of the Most High," "Heirs of Eternal Life." And man's body, the binding which He has furnished for this book, He has designated "the temple of the living God—the tabernacle of flesh." The Bible is not only a book of religious and ethical teaching, but also a history of the reason, conscience and experience of men for a thousand generations.

The Bible is the revelation of God's mind and will, and so is man, who was "made in His image."

The Bible is God's book, but so is the physical universe His book and the revelation of His will. The Scriptures affirm this truth, also, when they say, "The heavens declare the glory of God and the firmament showeth His handiwork. Day unto day uttereth speech and night unto night showeth knowledge." Thus God has three books instead of one. His first book was the physical universe, His second book was man and human reason, conscience and experience. And then He added the third, the oracles of Divine truth, to instruct His spiritual atom, man, in the essential truths of life, spiritual being and moral perfection. The theologians should remember this, and the scientists should read and study all these books.

Man is a second edition of God epitomized, and in his enlighted spiritual nature he thinks like God, reasons like God, and has the moral conscience, goodness and love that emanate from God. All these books of God should bear the same infallible testimony. The Bible should be in accord with the reason, conscience and experience of man, and both with the constitution and laws of the physical universe. Wherever they seem to differ or contradict each other it is because we do not understand them, for there is perfect unity and harmony in all creation.

Flammarion says: "Science in revealing the plan of the universe will show that the moral universe is based upon the same plan, that both worlds form but one world and that spirit governs matter. The same laws rule everywhere and make the vast universe a unity. All the ages of the past and future are one with the present, and thinking beings will live eternally through successive and progressive

transformations. Everything progresses toward supreme perfection. The material world has but an apparent existence, and the reality underlying it is a force imponderable, invisible and intangible." Man is apparently an animal, but he is not; that is the visible side of his nature and is deceptive.

All he beholds is apparent. The reality is something altogether different. The sun seems to revolve around the earth, and the earth seems to stand still. The reverse is true. We dwell upon the surface of a body revolving in space and projected with a velocity seventy-five times greater than the speed of a cannon ball.

We hear a harmony of sweet sounds which charm our senses. The sound does not exist; it is an impression made upon our sense of hearing by vibrations of the atmosphere which themselves emit no sound. Without the auditory nerve and brain there would be no sound. In reality there is only motion in the ether.

The rainbow expands its radiant circle, the rose and lily sparkle in the sunshine; the green fields and golden grain diversify the landscape by their vivid colors. But there are no colors; there is no light; there are only undulations in the air that set the optic nerve vibrating. The sun warms and fertilizes, the fire burns, but there is no heat, only the sensation of heat. Heat, like light, is only the result of motion—invisible, all-potent, supreme. Here is a solid iron joist sustaining tons of enormous weight, yet the joist is composed of molecules which do not touch each other and are in continual motion. What constitutes the solidity of this bar of iron? Not the atoms that compose it; but the cause

of its solidity is molecular attraction, the invisible force of magnetic attraction.

The present scientific theories have only been apprehended by the brightest intellects within the last half century, and would have been a conglomeration of absurdities to the wisest men of the world a century ago. So, written revelation had to use the language and symbols understood by the ancients. And it seems that scientific evolution is constantly struggling for new terms to express new ideas and discoveries.

Some scientists believe it impossible for the terrestrial being to attain a complete knowledge of the truth because he has only five senses, and a multitude of the phenomena of nature remains unknown to his mind because he has no means by which to reach them. Just as if we should be unable to see if deprived of the optic nerve, or to hear if deprived of the auditory nerve. Our terrestrial harp may be wanting in many chords which prevent us from catching the perfect harmony and truth of the universe. It is said the smallest magnet can more easily than Newton or Leibnitz discover the magnetic pole, and the swallow has more knowledge of the varieties of latitude than had Columbus or Magellan. But whatever our experience, it is a part of the book of God and nature.

Flammarion says: "No one who is aware of the progress made in the exact sciences of to-day can pretend to be a materialist. The psychic atom, the principle of the human organism would be immortal, like atoms everywhere, if scientists were to admit the fundamental axioms of chemistry. But it would be superior to atoms, and be conscious

of its existence. Can the soul partake of the character of electricity? We conceive that it exists as force that survives the dissolution of the body."

I conceive the soul controls electricity, which is the right hand of its power, and the tongue of the spirit, and survives in conscious power "the wreck of matter and the crush of worlds." "Whither does the soul go?" asks the same author, and he answers "to other worlds. Yes, living principles of force can transport them from one world to another." I agree with him. I believe they go to other worlds, and the other worlds are perfected sun-worlds. We must not think that the soul belongs to some supernatural world. There is nothing that is not in nature. Nature is unceasing progress. It is only a few thousand years since terrestrial humanity emerged from its chrysalis state of being. Yet certain spirits have attained transcendent power, and humanity has produced a Shakespeare, a Goethe, a Hugo, a Newton, and a Milton. We live in reality among the stars.

We are inhabitants of the skies. Life, light and eternal progress to perfection is the final end and purpose of the universe. Every thinking man feels in his moral and psychic nature that he is linked to justice, truth and Deity.

Maeterlinck, the Danish philosopher, sustains this thought in his latest work when he says: "Though nature appears unjust and nothing authorizes us to declare that a superior power rewards or punishes here or elsewhere, it is none the less certain that an image of that invisible, incorruptible justice we have vainly sought in the sky or the universe *reposes in the depths of the moral life of every*

man. It will not add to or take from our wealth, it will bring no immunity from disease or lightning, it will not prolong one hour the life of the being we cherish; but if we have learned to reflect and to love, it will establish in heart and brain a contentment that shall still be inexhaustible and noble.

"It will confer a dignity of existence, an intelligence, that shall suffice to sustain our life after the loss of our wealth, after the stroke of disease or lightning has fallen, after the loved one has forever quitted our arms."

It is said Jesus was a chosen medium to communicate to the people of the earth the higher sentiment of love which prevails in the sphere of spirit life. His mission was to teach the doctrine of love to humanity, and to afford a striking and never to be forgotten example of its violation.

This same Jesus taught that God's law is written in the hearts of men, and to those who listen to His voice—the still, small voice of the spirit—"He moveth in them to will and to do according to His good pleasure." This shows, as Maeterlinck says, "That the invisible justice that reposes in the moral life of every man" comes from God and His epistle, written on the secret tablets of the human soul.

Goldwin Smith says: "It will be found that Anarchism and Atheism generally went together. But minds of the finer cast have preserved the religious spirit while they have thrown off the shackles of creed. Yet the Positivest feels the need of a religion, and for the worship of God he substitutes the worship of humanity. Humanity is an abstraction, an imperfect abstraction. It cannot hear prayer or respond in any way to adoration. The

adherents of Comte's religion, therefore, are few. Tindall and Huxley would console us for the loss of religion by substituting the majesty of law. But the idea of law implies an intelligent, authoritative imponent of some kind. There is no majesty in a sequence.

"The all-embracing philosophy of Herbert Spencer excludes the supernatural and Theism in its ordinary form, and looks upon them as the Unknowable, which he presents as an object of reverence. But unknowableness in itself excites no reverence, even though it be supposed infinite and eternal. Nothing excites our reverence but a person, or at least a moral being." Thus does Goldwin Smith, the great Freethinker of to-day, demolish the Freethinkers of yesterday, the Tindalls, Huxleys and Darwins of Materialism, the Comtes and Voltaires of Atheism, and the Herbert Spencers and Ingersolls of Agnosticism, and contends for the inexorable necessity of a personal deity with intelligent moral or spiritual power. He says the present tendency is "to minimize the supernatural and throw it into the background, bringing the personal character of Christ and his ethical teachings into the foreground," and, "the legemen of reason should consider to how great an extent our civilization has hitherto rested on religion."

Abstract humanitarianism, and scientific naturalism do not constitute a moral standard, nor can scientific postulates be made a basis for moral culture. Only when acted upon by man does nature give response to the increasing purpose of the world, and the supreme test is spiritual. Religious truths are fundamental truths. First, the existence and

personality of God; second, His creation and government of the universe; third, man's immortality and freedom of will. These are not contradicted by the solid facts of science nor shattered by "the great eternal iron laws of the universe." On the contrary all harmonize with these great truths.

Emperor William of Germany in his letter to Admiral Holbrun, Feb. 20, 1903, says: "I distinguish between two different kinds of revelation—progressive and, as it were, historical, the other purely religious. It does not admit of a doubt that God reveals Himself continuously in the race of men created by Him. He breathes into man the breath of His life, and follows with fatherly love and interest the development of the human race. In order to lead it forward and develop it, He reveals Himself in this or that great sage, whether priest or king, whether among the heathen, Jews or Christians. Hammurabi was one, so was Moses, Abraham, Homer, Charlemagne, Luther, Shakespeare, Goethe, Kant, and Emperor William the Great. These he sought out and endowed with his grace to accomplish splendid, imperishable results for their people in their intellectual and physical provinces according to His will." Emperor William seems from these statements to be a firm believer in spiritual revelation and personal inspiration.

"The second form of revelation, the more religious," he said, "is that which leads to the manfestation of our Lord. It was introduced with Abraham, slow but forward looking and omniscient, for humanity was lost without it. Now begins the most astonishing activity of God's revelation. Abraham's race and the peoples developing from it,

regard faith in one God as their holiest possession, and it follows, hold fast to it with iron-like consistency. It was the direct intervention of God that caused the rejuvenation of His people through centuries, till, the Messiah, heralded by prophets and psalmists, finally appeared, the greatest revelation of God in the world, for He appeared in the Son Himself. Christ is God—God in human form. He redeemed us, and inspires and entices us to follow Him. We feel His fire burning in us. His sympathy strengthens us. His discontent destroys us. But also His intercession saves us. Conscious of victory, building solely upon His word, we go through labor, ridicule sorrow, misery and death, for we have in Him God's revealed word. That is my view of these matters. It is to me self-evident that the Old Testament contains many sections which are of a purely human and historical nature and are not God's revealed word. These are merely historical descriptions of incidents of all kinds which happen in the political, religious, moral and intellectual life of this people."

This letter of Emperor William was in reply to Prof. Delitzsch, who contended that Moses and the Israelites got their laws and religion from the Babylonians. The recent discoveries in Asia Minor seem to refute Delitzsch, especially those at Nippur.

Nippur is situated between the Euphrates and Tigris in Babalonia. It is one of the oldest towns spoken of in the Scriptures. The famous temple, library and school for priests cover an area of thirteen acres, and are pronounced the most far-reaching archeological discoveries of the century. Only about one-twelfth part of the library has been uncovered,

out of which over twenty thousand cuneiform tablets and fragments have been obtained belonging to the era three thousand years before Abraham, or nearly six thousand years before our time.

These show strong evidence of civilization and culture. There have been found evidences that free-hand drawing, clay-modeling and sculpture were taught. There were found works of reference, scientific treatises, and various technical volumes on astronomical and religious subjects.

These discoveries show the knowledge and culture that existed in the days of Abraham, and are a powerful demonstration of the unshaken truth of Old Testament prophesies.

Prof. Hilprecht, who made these excavations and discoveries, says: "As the attempt has recently been made to trace the pure Monotheism of Israel to Babylonian sources, I am bound to declare this an absolute impossibility, on my basis of fourteen years' researches in Babylonian cuneiform inscriptions. The faith of God's chosen people is: 'Hear, O Israel! the Lord our God is one Lord,' and this faith could never proceed from the Babylonian mountain of gods—that charnel-house full of corruption and dead men's bones."

The fact is, as far as I am able to judge, every recent discovery of science tends to sustain the essential truths of the Bible, and confirm the religious concept.

Those who think that religion is losing its power should remember that thousands of converts are added to the churches daily, and fifteen church buildings on an average are erected every day in the United States alone. And there are besides

thousands of persons, like myself, of a thoughtful, religious nature who are not members of any religious order.

Scientists should omit from their works all spirit of antagonism to religious faith. Such antagonism impairs the usefulness of their works, and is an offence against public morals, public security, and man's aesthetic nature and psychic advancement. Religion has helped to develop the spiritual life of the race, and is the anchor of all good society, good government and exemplary conduct in man.

The religious faith and even superstitions which some scientists rail at with such vehemence was a necessary phase of human history and experience to lift the human race to a higher plane of spiritual power. Science has passed through the same phases of credulity and superstition.

Whiskey, wines, and intoxicants once had their useful phase in arousing the sluggish brains of our half-civilized ancestors to higher realms of thought and perception. So, what now seem the most absurd superstitions once had their usefulness in deterring men from crime and causing them to lead better lives. The dread of physical punishment hereafter, and the fear of a hell and a devil that never existed, had a salutary effect on countless millions of the past which no moral persuasion or scientific arguments could have reached. But all intoxicants with their blighting curse, and all superstitions with their blinding ignorance have had their day of usefulness and should be relegated to the dark tomb of oblivion.

The solemn cathedral, the soft-toned organ, the mellow light from colored windows, the awe and

anxious faith, have added soul development and psychic power to human life.

The mother who bowed in prayer, the father who assembled his children around the family altar, have added spiritual power to themselves and their posterity for all generations.

And it is the honest, home-loving, God-fearing and praying mothers and fathers of the past three centuries that have made the Anglo-Saxon race and the civilization of to-day what it is.

The Bible says truly, "to be spiritually minded is life," and to be worldly minded is to lead us back to pagan selfishness, when cruelty was a pastime, and poisoning and assassination were fine arts.

This book of God we call man is bound in imperishable atoms that dissolve into viewless ether, and are tied together with electric bands as pliable as silk and as invisible as thought, and the spirit they enwrap is as strong and enduring as omnipotence.

The statement is often made to the prejudice of religion that religion has been the cause of most of the wars and cruelties that have desolated the earth since the commencement of human history. This is unjust and misleading. Until the formation of our government, church and state were united among all nations and politics and religion were blended, and a purely religious war was impossible. As to the miracles of the New Testament, if they were all discredited the immaculate teachings of the gospel would remain. The peculiar glory of Christianity is the regeneration it brings to man, putting him under the law of love; and without miracles we would still have vital, uplifting, heaven-inspiring Christianity.

As to the infallibility of science, she has nothing to boast of over religion. Science has been groping her devious way from colossal blunder to blunder, and championing as many absurdities and superstitions through all the ages as ever the religious devotee dreamed or the religious concept propagated. She is still teaching some of the grossest superstitions and incredible absurdities. Science has received nearly every fundamental truth from religion, and is at last steadily developing and proving the true religious concept of the universe, in showing that all visible things are the product of invisible spirit, invisible law and invisible force; that the spiritual and invisible world is the supreme reality; that its Creator and Ruler must be the Father of Spirits, and virtually re-echoes the words of Christ, "God is a Spirit, and they that worship Him must worship Him in spirit and in truth." It teaches universal love, helpfulness and equality, which was demonstrated by Christ when He called for water and washed the feet of those who worshiped Him. This was His last object lesson, so little understood in Christian philosophy. But ethical and psychic science have lifted it to be the glory of perfected civilization, and endorsed the exalted truth, "Let him that is greatest among you be the servant of all."

All knowledge and truth are in a sense inspired revelation from God, whether written in nature or the human soul. There is scientific revelation written in physical facts and recognized by the senses; there is God's revelation written in the secret conscience and reasoning power of man, and they naturally sustain and supplement each other and the revealed truths of the Scriptures.

It may be that the first chapter of Genesis was not intended so much as an infallible record of the divine order in the creation of the world as to teach the vastly higher spiritual truth that creation is the work of God, thus leading men to His worship and away from the lower worship of sun, moon and heathen deities.

The mechanical conception as to the mode of inspiration and revelation tends to give way before a larger conception of the process—that God speaks to man through the experience of the events of life. Thus revelation becomes a living process, and all later history may become a commentary on sacred history, renewing and confirming the primal utterance of God to the soul of man.

The reign of law, which was little understood by the ancients, is now universally accepted and endows the human race with new powers. It also gives new conceptions of the "intelligibility of nature," which is but a modern scientific term for religion or the reliance on the will and wisdom of Creative Deity.

Herbert Spencer's "persistency of matter and force" is but another expression of the reign of law. And as law is the result of an intelligent spiritual concept and impulse, the lawmaker of the universe must be a supreme, intelligent, spiritual personality.

And the reasoning, intelligent soul of man, by discovering the immutable laws of nature, which are the unchanging decrees of Deity, has learned the art of controlling the great powers of nature for the use and convenience of man.

But in the ultimate analysis it is God's spirit and will that control the universe, and man's spirit

and will which evolve the art of controlling, and masters the great powers of nature.

Therefore, we must look to the powers of the mind to subdue all other powers. This it does by constructive reason and vitalizing faith. By constructive reason it builds bridges, tunnels mountains, operates engines, telegraphs and all the appliances of modern commerce. By vitalizing faith it renews and strengthens body and soul, and seems to work the miracles of God.

Prof. Osler says: "Faith is a most precious commodity. Faith is the great lever of life. Without it man can do nothing, with it all things are possible. Galen says: 'Confidence and hope do more good than physic.' Faith in the gods or the saints cures one, faith in little pills another, hypnotic suggestion a third, and faith in a plain, common doctor a fourth. In all ages the prayer of faith has healed the sick, and the mental attitude of the suppliant seems to be of more consequence than the powers to which the prayer is addressed."

Miracles, says criticism, belong to an age of ignorance. With the dawn of knowledge they diminish. In its meridian light they disappear.

The Jews were eminently addicted to belief in miracles. With them there was satanic miracle as well as divine. They believed in persons being possessed by devils, and all efforts to disentangle them from the demoniac miracles and to resolve them into cures of lunacy by moral influence was vain.

Comte totally discards belief in God, but, feeling the need of a religion, substituted the worship of humanity. Humanity is an abstraction by itself, but combined with the Christianity and the mono-

theism of the New Testament, it is the perfection of ethics and religion. They who preach the religion of humanity, morality and true socialism will find it more perfectly taught in the New Testament, with nobler incentives and higher inspiration and spirituality, than elsewhere in human history. And it accords more perfectly with the book of truth, written in the reason and conscience of man.

Prof. C. F. Kent of Yale, says: "There is no conflict between science and religion. The Bible does not pretend to teach science, but does speak with authority with regard to questions of morality and religion.

"The pathetic fact is that the fundamental spiritual truths the Bible narratives seek to teach are lost sight of in the contention for historical accuracy, which was entirely secondary with the authors. The prophets used ancient narratives, the same as Jesus used parables, to illustrate spiritual truths."

Dr. Beet, of Wesleyan College, England, denies that either "the endless suffering or the extinction of the wicked is taught in the Scriptures," and says: "Very few Wesleyans now adhere to Wesley's teachings concerning it."

The essential truths of the Bible are just as true without miracles as with them. Christ said a wicked and perverse generation seeketh a sign or miracle.

Truth is inherently true and needs no miracle to confirm it. And the tendency of all ancient writers, as well as those of the Bible, to exaggerate natural phenomena into wonders and miracles cause many to discard the great truths of revelation. I under-

took to show how Joshua might have mistaken a luminous aurora borealis for the sun standing still. And I am inclined to think that a mistranslation is responsible for the story of Jonah and the big fish. Somewhere in ancient history I got the idea that the pirate boats in ancient times were called, "the big fish." If so Jonah might have been captured by the pirates after being thrown overboard, and put in the hole or belly of the boat, and after three days, seeing no prospect of a ransom, was thrown onto the land. God may have prepared the pirates and boat for this purpose and a miracle would be unnecessary. The writers of that day would say Jonah was swallowed by "the big fish," meaning the pirates captured him, and centuries afterwards the translators would make a great miracle out of it. Take many of our modern expressions, as, "the ship and sailors went to Davy Jones' locker;" if centuries hence our language should become obsolete, the translators would say, "the ship was in a great storm, and it and the sailors were all saved by running into David Jones' big chest." That would be a literal translation, but would not state the facts. Take another illustration. In the war, "a company was lost in the woods and was gobbled up by the enemy." A future translation would read, "a company of soldiers was lost in the woods and a ferocious turkey gobbled and eat them all up." Either of these would make a greater miracle than Jonah and the whale.

I mention this to show how easy it is to mistranslate an obsolete language, especially an Oriental language, always so full of figures of speech, hyperbole and parables.

There is the wonderful capture of the city of Jericho. When the Israelites, under Joshua, marched round it seven times, and blew seven long blasts on their ramshorns, the walls fell. Now, the spies may have reported to Joshua the weakness of the walls, and, by marching round them seven times, caused the people of the city to crowd onto the walls, and the vibrations of the horns caused them to fall.

We know that the vibrations of thunder or cannon or any loud noise has caused many a house to fall, and would endanger any weak building or wall. I believe that if every miracle in the Bible was disapproved or shown to be a natural event it would not destroy or affect a single important truth it teaches.

While I believe the brave and honest man will refuse happiness at the expense of truth, I must partly agree with Luckey, the historian, who says we owe more to our illusions than to our knowledge; that superstition appeals to our hopes as well as our fears, and often meets and gratifies the inmost longings of our heart. Imagination, which is altogether constructive, contributes more to our happiness than reason, which is mainly critical and destructive. He says: "The rude charm clasped by the savage, the sacred picture protecting the poor man's cottage, can bestow a more real consolation in the darkest hour of human suffering than the grandest theories of philosophy." This was more distinctly true in the early history of the human race, when ignorace and superstitious wonder dominated all minds and all important events were deemed supernatural or miraculous.

Take the superstitious worship of the Virgin Mary;

its beneficence to the human race is beyond all human calculation. It helped to elevate and spiritualize woman and lift her offspring and the generations of men to a higher spiritual plane.

Romantic love between the sexes was never known, so history teaches us, until the worship of the Virgin Mary became universal throughout Christendom. No such sentiment existed in Greece or Rome or any pagan country, and none exists now in any pagan or Mohammedan land. There women are still treated as chattels and denied a soul. We should remember that for man all religions were instituted, all books written, all science formulated, all literature ennobled, all progress inspired, and all art made beautiful.

Human reason, the perfection of the universe and the words of revelation all teach—

Man's soul is part of Deity, and as immortal as its Creative God.
Death is but a shadow across its path of destiny.
To the soul there is no grave; the tomb cannot grasp its viewless form;
Earth is but its birthplace—the cradle of its infancy—
Where it drops its cumbrous wrappings for the wings of immortality.
Time, the vestibule of eternity, is where it points its course and takes its leap
Into the vast unknown toward the Infinite and Eternal, and sweeps
Out upon its endless progression in knowledge and perfection through immensity of worlds.

CHAPTER XIII.

LOVE IS THE ELECTRIC LAW OF LIFE: ALL THAT LIVE MUST COME FROM LOVING

God is love, and love is the law of life and the creative force of the universe. The love of God in the soul is the substance and life of all religion. The love of fellow-man in the heart is the foundation of all human kindness and social ethics. As Dante followed his beloved Beatrice from world to world until he found her at the gates of Paradise, so we must follow our loves and ideals through all the tragic incidents of existence until we find them as guardian angels at the gates of celestial glory and creative perfection.

A noble character, a worthy and useful life of service to others is the chief purpose and crowning glory of all earthly existence. Wealth and fame are mere incidents in the fleeting drama of human experience.

All true greatness is in the beauty and grandeur of the soul. It must come from within; external manifestations may shadow it forth, but cannot produce it.

All true gentleness and kindness are a reflex of the inner life of love and willing service. We live in the atmosphere that our thoughts and spirits breathe around us, and by opening the windows and doors

of our soul to love we inhale the perfume from other souls, and the breath of life from Deity Himself.

Thoughts are forces, and through them we have creative power; but they must be winged with love to manifest divine energy. Every act is preceded and given birth to by a thought, the act repeated forms the habit, the habit determines the character, and character determines the life and destiny.

Everything in the material universe has its origin first in the spiritual concept or thought, and from this it takes its form. The spoken word and the mighty deed spring from the potency of living thought, and life is a tireless swimmer in an ocean of thought. Thought is the conscious energy of the soul, the subtle, invisible force of the reasoning, resistless mind, and, to be potent with life, must be winged with love. Thought is everywhere and surrounds us like the atmosphere we breathe. When we want a thought we should reach up into the air for it with the caressing hand of love, and it will come like an invisible messenger from spirit land. We should seek thought and wisdom in the intellectual zenith of our own minds, and not from mediums or clairvoyants, for they have never revealed any great truths.

Thus our great poets, sages and prophets have reached up into the spiritual altitudes and gathered wisdom and truth as the stars are gathered and sparkle in the glittering mirror of night's far off and measureless spaces. They come with the speed of light from all suns and spheres in the jewelled crown of God's eternal expanse of love and life, they whisper wonderful things to the listening spirit in the silent chambers of the dreaming soul,

and they come like angel faces in the visions of night and paint with the flaming finger of anticipated joy the glorious beatitudes of immortality and love. There is the science of thought which brings wisdom and success, and the science of love that brings peace and joy. It is a beautiful thing to live. Life is the fine art of the soul, the literature of the spirit, where it writes its hopes and achievements.

It is the theatre of all possibilities here and hereafter, but its atmosphere must be magnetic with love and faith where the spiritual forces may battle and exert their powers. We must first love all the world if we would have the world love us. Only what comes from the heart can reach the heart of the world, for mankind will care little for us unless we show we care for mankind. But what man earnestly desires and persistently wills and strives to accomplish through love will finally be attained. Love and goodness are all-powerful and will eventually conquer.

The first cause of all discontent, weariness, bitterness and vanity of life is selfishness. It is the corrosive element that rusts away all the pure gold of energy and aspiration. It is as amazing as sad that we burden ourselves with selfish strivings that are of no consequence, and miss the gladness and exhilaration of living. For no life is successful unless it is radiant with love and usefulness. Emerson says: "Life is an ecstasy and nothing else is really worth living. Happiness is not determined by a bank account or the flattering incense of praise, but is a mental and spiritual condition."

Ye who seek liberty know this; it can only be found in the liberty of your fellow men. Ye who seek

happiness know this; ye can only find it in the happiness of others, and if you desire to be happy you must make others happy. This is God's eternal law of compensation—of altruism—love to others; what you do unto others you do unto yourself. Look upon thy fellow man with wisdom and thou shalt have love. Feel for thy fellow man with love and thou shalt have wisdom, and, having wisdom and love, thou hast God and heaven in thy heart. These are the golden rules of the New Testament, written in the reason, conscience and experience of men, as God's living book of wisdom and truth.

Every action has its rebound or echo. Others will return your love or hate as the mountains return an echo, and by the same law. "Whatsoever a man soweth, that shall he also reap." The hate you send forth will return to you, the love you gave will come back to you, for it is an immortal part of you and a part of Omnipotent Deity.

If you are sick, love! If you are envied, hated and slandered, love! If age and death steal upon you, love! For God is love, and heaven is love, and love is life eternal. This is God's law, this is the law of man's nature, the law of the New Testament, the law of love and life, the law of the universe.

Whatever may be man's misfortune, if he has a love of humanity, a love of literature, art or nature, he has resources of happiness that nothing can remove. With these the poor man is rich, and the rich man can never be poor. For each by love has overcome the world. Therefore believe and love, and hold fast to the conviction that the forces of life are divine and eternal, and their laws written

in the reason and consciences of men, and that death is only a transition from our world to another of greater beauty and perfection. The inadequacy of earth-life to satisfy the soul's capabilities is evidence that its career must continue hereafter in brighter worlds of celestial love and destiny.

It is said the common epitaph of humanity is, "They mean well, try a little and fail much." But if love is their guiding star and they obey the dictates of their reason and conscious duty, their lives cannot be failures. Most of our troubles and cares, like echoes, do not exist until we call them forth. But sweet, subdued sorrow, and the tears of love and sympathy that spring from the generous heart to the soulful eyes, are like heavenly dews, and promote the growth of the soul. They should not be classed among the depressing trials. Neither should friendly rivalry, or laudable ambition to excel, be deemed trying aggressions, for they are beneficial phases of growth. Humanity should emancipate itself by hitching its chariot to the star of love, and switching the current of human energy from the circuit of worry and anger, and connecting it with the motors of good thoughts and noble deeds.

All men should realize the fact that anger turns the natural juices of the body into poison as the vibrations of thunder sour the sweetest milk. And every fit of anger is an electric trip-hammer that drives a nail into the coffin of life and shortens human existence. All nature reveals the law of "natural selection and survival of the fittest," and demands in man the highest perfection of love, beauty and self-development.

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The culture of the divine essence of the soul, love and ideality will eventually emancipate, exalt and ennoble human life.

Love is the beginning of life. Love is the creative agency of all human and animal existence. Even the vegetable world, trees, shrubs and flowers have their dual, sexual amities, and their male and female blending in the love of unity and the unity of love, and thereby propagate and continue their species in the ever changing cycles of life.

All that live must come from loving. The positive and negative circles of electric and spiritual forces in man and woman must be broken and reunited in a combined circle of dual vitalizing growth and power before God's first command, "be fruitful and multiply and replenish the earth," can be consummated.

God has so organized the universe that love brings life and continues it, while hatred checks all the sweet gushing juices and joys of hope and life, and, brings death and darkness. Love commands the electric creative forces of human life as God commands them in the boundless heavens. Love is the elemental part of God, and the godly part of man. And he whose soul is diffused with love is enwrapt in the effulgent drapery of Divine goodness and joy.

Woman by Divine right and the Supreme decrees of destiny is the ministering angel of love and life, and is next to God the Creator and Preserver of the human race.

All that live must come from loving
In the hallowed name of wife,
God has set the bounds of being
And the joy of giving life,

Some very strong writers believe man's body is the product of the thought and mental force of his progenitors. If so, the mental impulse of love, and even its lower form of animal passion, is the begetter of the human race. Mrs. Josephine Barton, in "Mothers of the Living," declares, "The history of flesh has its beginning in the male atom, and exists as an unembodied idea in mental solution. Thinking results in ideas and ideas crystallize into form. Thoughts are the blocks out of which children are made. The physical gets its breath of life from the mental or spiritual. The first avenue of development after its appearance in form in the male parent is the daily and hourly thinking, exercised in the mentality of the parent. These atoms, though microscopic, are the brain and spinal cord of the atom man. The product of the male element is judgment and will, of the female love and intuition; so the atom man crystallizes only the seat, brain and nerve faculties. This structure—temple of the soul—like the acorn, has inherent within it growth and fruit possibilities."

She arouses useful thought and adds with force and eloquence, "All men are, by their daily thinking, moulding the brain and spinal cords of future men.

"O men of earth! what qualities are you weaving in your thread of thought? Of what substance are you moulding the grand army of the future race? Are you endowing them with the intellect of true manhood, or crystallizing into atoms all manner of distorted brains?

"Our bodies are bulletins of our thoughts, and the male atom is the microscopic beginning of childlife; and when expelled from the loins of their

progenitors, become the 'living souls' that people the cities and the plains. The human atom thus formed, when imparted into the custody of the mother, is ready for the breath of life which the mother mind, by love and intuition will breathe into it. The temple for a human soul is thus constructed. The nourishment then given is as pliant to thought as the ocean to a raindrop, and prenatal education is most important. O splendid fact! Be lifted up. thou expectant mother of the living! You are at liberty to take the helm of possibility and steer for the sunlit isles where all sons are gods. The mother should be herself what she would have her child be. She should affirm and reiterate. 'I am the heir of all wisdom, the expression of all beauty, the revelation of love and truth, the life proclamation of the Eternal. I am serene, radiant, valiant, loving, aspiring, knowing.' Then will all conceptions be immaculate and all human life glorious and divine."

I maintain that woman is the prototype of the godmother of the universe, who is the third person of the Trinity, known as the Holy Ghost or Comforter. The Trinity of the theologians—*three persons in one*—is contrary to all human reason and logic. It contradicts every type of being in universal creation, and would be a monstrosity in natural law and creative experience. It defies all analysis and subverts all law of animate and inanimate nature. God never thus contradicts himself, his own laws, and his created universe, or the book of nature and man's reason; and no such doctrine is taught in the New Testament, when analyzed by a true construction of language.

To deny the Trinity was a crime punished by death a century or two ago in England; and ecclesiastical authority there and elsewhere prescribed what man should believe for centuries, or receive the punishment prescribed by law or the Inquisition. Until recent times men were not allowed to think for themselves.

But reason and truth, written in the soul of man by the finger of Deity, will assert its divine right to correct the blunders of ignorance and superstition.

And as it was many ages before the fatherhood of God and the brotherhood of man was discovered and recognized, so it required modern intelligence and reason to place woman in her true and God-given position; and recognize in God the Father, God the Son and God the Mother, the same natural trinity in heaven as exists on earth in father, mother and child. The book of nature, and the book of man's reason asserts there can be no father or son without a mother. They would be an anomaly in nature, unthinkable and impossible, and if there is a Father and Son in heaven, there is a Divine Mother, who has always been there as the companion and counselor of Deity, and is also the Divine Comforter of all human souls. And if there is sex in all nature, it is reasonable to believe there is sex in the family of Deity. When Christ said, "I and my Father are one," he meant one in purpose and spirit.

Up to the recent centuries, woman was the chattel slave of man, kept in ignorance and degradation, and deemed inferior to man, and the past ages would not recognize her divinity, or her equality with man. But now she stands on a level with

man, heart to heart, and brain to brain, and every true man offers her the tribute of love and reverence, and recognizes that in all the realms of earth and stars there is no being so worthy of love and worship, next to Deity, as the *mothers of men.*

They are the saviors of mankind, whose vicarious suffering has brought forth and redeemed the generations of men.. They are the trees of life in God's earthly garden, whose branches, ladened with the fruits of love, have called forth the mysterious blossoms of being to bloom in the fields of time and people the land of immortal spirits.

The beginning of civilization was when the mother bid the rude men of the forest and hill to build the needed shelter in grove or cave to protect her and her helpless offspring. And from that simple shelter or thatched-roofed hut has sprung the vine-clad cottage, and the marble palace, and the family roof-tree of every house in every land. It was the mothers of men who filled up the broken ranks of war, and brought peace, and wove garments, and refined and civilized man and taught him the arts and commerce of civilized life. And could the mothers control the destinies of nations, their loving hearts would banish war, and peace would be universal.

And the most precious heritage of every nation on the green earth is the nobility of its mothers, for without noble mothers, it can have no worthy and manly men.

All nations should recognize this fact, and instead of giving pensions to those who destroy life, they should give them to those who multiply and replenish it, and make a nation worthy of existence

and fame. And God will surely bestow on the mothers of men a crown of eternal glory for every life added to his empire and domain of deathless eternities.

The momentous question arises in this busy age of travel and pleasure, when so many seek the luxurious ease of opulence and avoid as far as possible all cares and responsibility, Will the emancipated womanhood of our land deny the law of love and life, written in the heart and conscience of all sentient beings, and decline the angelic ministrations of maternity? Will they refuse to join in the economy of God and nature, or leave this high and holy vocation to the ignorant and superstitious of our foreign element? If so, the citizenship of our beloved nation will degenerate with each succeeding generation.

Will the modern woman seek social pleasures and the flattery of passing admiration in lieu of home life and maternity, and be satisfied to flutter as a gaudy butterfly of fashion? Will her womanly heart find the prattle of a baby voice and the pressure of its chubby hands upon her smiling face, as it crows in her loving arms, a truer, sweeter pleasure than the social triumphs of a few fleeting seasons? A joyous child brings more pleasure to a household than a marble palace with mahogany furniture and an automobile.

This is the all-important *woman question of the future*—the question of race suicide. For the entrance of woman into all the vocations of business life, the tendency to avoid domestic cares, the laxity of the marriage vows, together with the elimination of homes for boarding houses, and the prevalence of

divorces, makes it a serious question for the future. Already this pressing vital question causes the wisest men of France to tremble for the future of their race and nation, for its shrinking population is forcing it from the rank of a first-class power to the humiliation of weakness and decay. Will they listen to France's Macedonian call and the law of love and life written in their womanly natures?

Humanity of the past and present is not final. It shall not cease at the present development. Human society was never static. We are at the beginning of the greatest changes in human history. There will be no shock, but the transforming, silent touch of universal evolution, whose voice speaks thus: "We are the creatures of twilight, but out of our minds and the lineage of our minds will spring minds that will reach forward fearlessly. A day will come—one day in the unending succession of days—when the beings now latent in our thoughts, hidden in our loins, shall stand on this earth as on a footstool, and they shall laugh and reach out their hands among the stars."

It is said that the flower which opens and smiles upon the brink of an abyss is like love, which lives also between two eternities. It is the most human of the passions and at the same time the most divine. It is the most intimate and the most ethereal; it guides the poet when he scales the skies and lifts the soul to celestial raptures.

The gifted and the common mind are alike troubled, agitated and exalted by this divinity who evokes their silent passions and stirs their slumbering fancy.

Many animals change their form and color in the

season of love, and man is similarly affected in his psychic nature. Every human and divine element responds to the witchery of the god of love. And new colors in thought and character appear, and the glowing eye glistens with changing smile or tear, like dewdrops on the jewelled face of morn. The first touch of poetry lights up the prosy brain, the first ambitions, brilliant hopes, struggles, flashes of genius, and heroic resolves spring forth like living phantoms at the magic power of this matchless magician of the soul.

Woman, far more than man, is reared in the regions of love, and has more leisure to reflect on the secret movements of her heart, and to gather the wisdom and beauty of love and distill it as the rarest perfume of life. Love is woman's crown of divinity. Love lifts man to his highest capabilities, noblest enterprises and loftiest ideals, and makes him monarch of a larger and more beautiful world.

The history of man shows how gross and abject natures are transformed by love. How dull and stolid minds have been guided by it to paths of honor and glory. It is said that fame and science should guard themselves from love as from a dangerous enemy, and that to be a great man one must love their art alone and be wed only to their great ambitions.

Ah! but for one genius killed by love, a hundred owe to it all their greatness and inspiration and the moving force of life, and bless it as superior to fame and sweeter than all the laurels of victory or the plaudits of success.

All the glory of art and science, of thrones and

crowns, is inspired by the love of woman. This was openly proclaimed in the heroic and chivalrous ages and should still be held in grateful remembrance.

If love does not always elevate and refine and work the miracles of its magic, it is because men lower their ideals of women and love. Woman has a stronger thirst after the ideal, a more refined sensibility, exquisite fancy and poetic nature and aids man to mount to loftier actions and ideals. In a beautiful picture, Dante is below, Beatrice above; he looks at her and is thus inspired, while her eyes, fixed upon him, seem to say: "Upward, upward; it is thither we must go together!" It is said nothing is so irresistible as the enthusiasm of woman. Without reason for believing, without strength for hope, sustained solely by love, she is always full of faith for the great and beautiful things, and with sublime imprudence cries, "Forward, forward!" and drags man to the most difficult summits of success.

A wise man says: "In the great and little things, after having consulted science and art, experience and imagination, after having read history and human hearts, also always consult the woman you love, whether it be a question of a book or a law, or a work of art, or of business, industry or poetry. She will certainly have something new to tell you." Ambition often fails to elevate men, they die without having attained their full measure of power. Only the love of woman could have given them the energy which ambition and self-love were powerless to bestow.

In the past ages the world prated much about

aristocracy. There have been four kinds of aristocracy in the world's history. There has been the aristocracy of muscle—the supremacy of brute force. This was followed by the aristocracy of blood or family pedigree, by which one claimed by inheritance superiority over others. Then came the aristocracy of wealth, which prevails in our day, whereby those who obtain fortunes by birth, accident, parsimony, force or fraud claim superiority over others less sordid or less fortunate. But the true and only aristocracy that ever has or ever will exist in the human race is the *aristocracy of love and goodness*. There is nothing so kingly as kindness, nothing so royal as truth, and nothing so godlike as love.

The aristocracy of muscle has brought misery and distress and cursed the world with cruelty and oppression; the aristocracies of blood and wealth have often brought sorrow to their possessors, and proved a rope of sand, a broken reed, a Jonas' gourd that faded in a night. But the aristocracy of love and goodness is God's aristocracy, and belongs to the society of heaven. It is a part of the family of Deity, and possesses the wealth of the universe. It is the pride of celestial hosts, and the joy and blessing of transient mortality. The humblest of earth may join this aristocracy of love and goodness and be a prince and king in his own right, by royal prerogative as eternal and enduring as the earth and stars.

Thus we find that love is the spiritual and electric law of life, and the crown-jewel of the universe; that it gives life and inspires it; that all the creations and forces of nature are dual and sexual, with

love as the supreme sovereign of all life and destiny.

Magnificent are the pyramids of Cheops, but while they and the groves of gods and pillars at Karnac were being reared for a tyrannous nobility and priesthood, twenty thousand common men agonized and died in the quarries. Beautiful was Athens, "The City of the Violet Crown," when the sunlight flashed from the Parthenon; but Aristodes was banished because he was just, and Socrates was murdered because he taught the oneness of God. Rome sat on her seven hills and ruled the world; but men were butchered in the arena to make a Roman holiday, and at night Christians were burned for torches to light up Nero's golden house. All this was because love had not exalted the ideals and energized the wills of men.

In the middle ages the sound of the chisels carving the marble dreams of Michael Angelo was drowned by the shrieks of victims of the Inquisition; and later in England, villains and serfs, even after Magna Charta, were hanged for stealing five shillings. In our own land Cotton Mather tells us men were crushed by heavy stones upon their breast, as punishment for petty offenses, and witches swung in the breezes of Salem; and less than fifty years ago human slavery was sanctioned by law. All these horrors and the cruelty of the world have been because men have not let love illumine the soul and energize the heart of humanity. To-day all this is changed. The ægis of the law protects the humblest citizen, and the fate of nations is decided not by a Hannibal or a Charlemagne, but in legislative halls and courts of justice. And all men

may work and hope, for fame is waiting with willing laurels for souls aglow with the fires of love and genius, who are destined to be torch bearers along the highways of heavenly harmonies.

> The heaven of all the heavens above,
> The god of all the gods is Love.

Carlisle, that rugged old thinker, declared that man should imitate his maker and "Create, create, create." This is the chief object of life. Not alone in the propagation of his race, but to build houses and temples, erect monuments, write books, fertilize deserts, and cause the earth to blossom with new flowers of fragrance, and new thoughts of beauty.

In order to thus glorify life and make it a divine ecstacy, and a stepping-stone to celestial worlds, love must be the guiding star, and will the creative-impulse. These two are the sovereign forces of the universe in man and Diety; and uphold and control all others.

Therefore man should make love and truth his ideals, and will his sceptre of power, and with each rising sun proclaim:

> "These two things should no man forget or lose
> Or sacrifice: his will and his ideals.
> These two things are the man. In leaving them
> Behind him in the dust of broken dreams
> He leaves himself. His nature is usurped.
>
> The lesson of all greatness is to be
> That which we are—out to our farthest bounds.
> To lift the high within us higher still—
> To delve our depths with a profounder depth—
> To push the near horizon of our minds
> Out past immediate things to ultimate."

CHAPTER XIV

JACOB'S LADDER IS THE ELECTRIC PATHWAY BETWEEN SUNS AND PLANETS

I CONTEND in my previous books that electricity and not gravity is the one fundamental form of energy from which all other forms, such as light, heat, vital force, physical life and so-called gravitation are derived by transformation. That electric energy is the one evolving creative force in the physical universe, back of which is the directing, intelligent, spiritual power of Deity, who has made all visible things of one matter—the invisible atom, controlled by one invisible power, electricity, after one unchanging pattern—the electro-magnet.

This necessarily teaches that the sun is not hot, that all heat, light and vital force is produced by the contact of positive and negative electricity in the dense atmospheric cushion of suns and planets, where alone it is needed for vegetable and animal life. All of which is produced by the positive electric currents of the sun coming in contact with the negative electricity of the planets, just as two wires oppositely electrified and brought together produce the arc and incandescent electric light.

I contend that the suns are the self-luminous, perfected worlds of the universe; worlds like our world, only larger and more prolific in life and power than the planetary worlds. That they are the head-

quarters of Deity, and the future abode of man. This leads to the reasonable scientific hypothesis that our all-life-giving sun is where Christ ascended to, when the Disciples saw "a cloud receive him out of their sight;" where Elias was translated; where Paul was "snatched up to the seventh heaven"; where Saint John in the Apochalyptic journey saw "the new Jerusalem—the City of God." This wonderful city, from scientific facts and analogy, exists in the sun and could be no where else, and seems to be so represented in Revelations, and its description is grander than all the romances of earth. This gives the most reasonable scientific explanation of Revelations and the eternal beatitudes of the Christian's life everlasting, while at the same time it recognizes the law of evolution, and proclaims there is nothing supernatural in the universe.

I contend that the sun's photosphere is a brilliant, globe-encircling aurora; that the planets are the hatcheries of human souls, and the suns the place of their maturity and perfection; that all things are composed of atoms and electricity, which are as invisible as the soul. That the soul is an invisible atom of Deity, and, like invisible atoms and electricity, may pass to and from the sun.

In showing the terraced mountain on which the city in Revelations was built accorded with the proportions of the sun as compared with the earth and moon, a simpler illustration would be this: The sun's diameter is 110 times that of the earth, and as the earth has mountains six miles high, the sun should have them 110 times higher, which would be about 700 miles in perpendicular height, making about 1,200 miles measuring the slope from the

base to the apex. Or, if the mountains in the sun are as high in proportion to diameter as those on the moon, the mountains of the moon being three miles high, and the sun's diameter being 400 times greater than the moon; the mountains of the sun should be 1200 miles in perpendicular height.

Up to the last few centuries all standards of measurement were indefinite. The cubit, fathom, and foot all depended on the size of the man. A furlong was originally a furrow in an English field, and might be 300 or 800 feet in length. All these measures have been made definite by law or custom since the Bible was written. But the word translated *furlong* was the Greek word *stadium*, which was the length of a Greek foot race which was 520 feet (except in two instances); while a present furlong, the eighth of a mile, is 660 feet, making in 12,000 furlongs a difference of about 320 miles, making John's wonderful city 1,180 miles square. The ancient furlong was about what I put it—the tenth of a mile. Critics should inform themselves before displaying their colossal lack of information.

I contend that over ninety per cent. of the universe is invisible matter. This invisible matter floats in all space and permeates all visible matter as water permeates a sponge.

All matter in its primary and elementary form is invisible, and, being invisible, it partakes of the characteristics in this respect of invisible force and invisible spirit. These three invisible entities constitute the universe, its center and circumference, its invisible realities, its eternal foundation and limitless boundaries. Only one of these—matter—

by a vast aggregation of atoms, is converted from the invisible to the visible. This universe was made from *nothing*—nothing visible, nothing tangible, nothing the human eye could see or the human finger could touch. There was a time when the stars and planets, suns and worlds were transparent ether, as impalpable as the viewless air, and scattered as star dust in the measureless void of space along the forgotten highways of the past eternities. Silence reigned profound in the pulseless regions of the air, where, motionless and dumb, the atoms hung in dark and lifeless space. There was nothing in all this universe—nothing but cold, darkness and silence. But these are the home of atoms, the star-dust which Deity had scattered by the breath of his power through the highways of space in the beginning of primeval creation. While these were nothing to man, they were the foundation stones of all created things. This nothingness of space was the fallow ground of the universe and the formless shadow of suns and worlds. It was a universe in solution as viewless as ether, and as intangible as mind. The electric energy of space was yet unstirred by the divine fiat or shook into vibrating force by the word of Creative Power. Other suns and worlds and a universe of universes shone forth in the realms of space when the Creative Word was spoken that lit this newer universe into being.

"Let there be light," and from His lips that spoke no word but love and truth and power, the lightning of electric life and glory thrilled every atom with vibrating cosmic energy, and life-evolving force. Then the electric clothing of light and life

leaped into power and enwrapt as in swaddling clothes a new born universe. And wherever the breath of Deity was blown there was the glowing nucleus of a sun, or the revolving center of a world. Then atoms and electricity met in fond and unending embrace, substance and energy clasped hands, and matter and persistent force were woven into each other's arms and saturated with electric, life-giving energy.

The first starting point of the universe was the intellectual volition of Deity. The second was the law of nature impressed upon matter by electricity, the right hand of Deity and the tongue and word of His power. Spirit cannot act directly upon matter; it must have a medium controlled by spirit at one end and working on matter at the other. This medium is electricity. Matter is held together by the electric attraction of the molecules of which it is composed.

The molecules are composed of invisible magnets called atoms. This electric attraction acts continuously. Were it to stop its action for a second, solid bodies would instantly crumble to invisible atoms, our material forms would vanish into thin air, and the universe disappear in viewless ether.

The electro-magnetic force holds firmly the molecules of solid bodies and gives them their strength and solidity. It is more feeble in its cohesive grasp on liquid bodies and is very feeble in gaseous bodies. Molecules are in a ceaseless state of activity and motion, forever vibrating to the touch of electric energy.

The ever-restless and varying motions of the invisible molecules constituting all matter is like a

cluster of bees at their hive, or of ants at their nests, hurrying and scrambling over and around each other in constant and curious motions. And if our eyes were powerful enough to see the molecules of which a block of wood or a human body is composed, they would witness such a scene of activity as the crowded bees and ants exhibit, only still more curious and constant. When water is changed into steam it goes into the air as widely separated and invisible particles which disappear entirely, but every particle is still in existence and may be converted again into water. When wood is burned, it changes into ashes, smoke and vapor. Not a single particle is ever destroyed. It is so with our bodies, they dissolve into their natural elements, which pass into tree and shrub and air and water and other bodies; they never return to their organic form. There is no resurrection of the physical body. What goes down into the grave never comes forth again. The spirit-body never enters the grave, but soars to the celestial cities of the sun in a new and endless life. Nature and Deity would not do so nugatory a thing as to resurrect three or four bucketsful of water and a handful of bonedust. Fresher and better material is at hand in abundance all the time.

There are bodies all around us so small that we cannot see them. They are in the air we breathe and in the water we drink. Some of them are alive and some are not. Many of them are so small we need the most powerful microscope to detect their presence. Yet every one is made up of parts much smaller than itself. The fine dust which clings to our fingers when we hold a butterfly or a moth, scarce visible to the naked eye, is found under the

microscope to be made up of a thousand or more still smaller particles.

There are living creatures so small it would take a million of them to equal the size of a mustard seed. Millions of them float unseen in the air around us, and swim in the drops of water we drink. Millions more float through the blood in our veins, which to them are vast, surging seas of life. They are so very small, a thousand of them might fly side by side through the eye of a needle. Yet each little creature must be made of still smaller parts, else they could not move or devour their food; they are too infinitesimal for the grasp of our imagination.

If we keep on dividing a body into smaller and smaller pieces, we at last get a piece so very small it cannot be divided again without changing into some other kind of matter. These smaller pieces are called molecules, which are particles of matter which cannot be divided without changing their nature. All bodies are porous and have spaces between their molecules. This was proven of gold a long time ago at Florence, where a hollow globe of gold was filled with water and shut up tight, then put under immense pressure. The water was forced by the pressure through the pores of the gold as a fine dewy moisture or perspiration. The same result would have occurred had it been iron, copper or any other metal, as there is a space between all molecules in all bodies.

All molecules in all bodies revolve around each other without touching. You can stand a man before the Crookes tube or Roentgen rays and look through him and take pictures of his bones, and

look through his bones and take pictures of objects on the other side of them, and also look through four-foot walls. And photographs are now taken through six-inch brick walls.

All spaces between the molecules of all visible substances, all pores and cavities in all organic bodies and inorganic matter, including the earth, and all animal and vegetable life is, I contend, permeated and occupied by invisible electro-magnetic ether. This ether is the life-giving and life-preservative force and essence of the universe and that from which all things have been evolved. All suns and worlds and all their complex creations and everything that exists floats in this boundless, vibrating sea of magnetic ether. And there are vast and mighty currents of electric force and power reaching from every sun and planet to every other sun and planet in the universe. These are enduring bands of strength, invisible ligaments of magnetic power that bind the universe together as one complete, harmonious electric organism. They constitute the unity and strength of all creation and promulgate and enforce the laws of nature.

They are vast highways of space, the boulevards of the universe. We cannot see them, neither can we see elemental matter, or electricity, or life, but we know they exist, and are the foundations of the universe.

Human spirits, at death, when they drop their visible vesture of atoms, can step onto this electric tide, this current of swift-speeding light and power, and in eight minutes or less time enter the heaven of their dreams in the celestial cities of the sun.

They have but to step on this flowing tide of elec-

tric power, as they step on a moving stairway or platform in our cities here on earth, to be borne with scarcely a sense of motion to their bright and heavenly abode. It is a swift and continuous band, an endless chain, a mighty ligament of light and life and power constantly passing between heaven and earth, and earth and heaven, between sun and planet and planet and sun. These are the countless pathways between suns and stars, the mighty and everlasting highways of eternity which God hath built to span the silent ether of space between suns and worlds, and bind the universe in one harmonious whole.

On these mighty currents, as on a moving bridge of golden light, angels and men and ministering spirits may pass and repass to the gateway of eternal life.

Moses and Elias, Christ and John, and all the departed saints of earth have trod this Jacob's ladder on which the angels ascend and descend between heaven and earth, and all the departed denizens of earth have trod its golden stairs to their celestial, sun-bright home.

Dr. Minot J. Savage, the eminent New York divine, says he objects to my putting eight minutes of time between the earth and the spiritual world. He thinks Christ taught that they were in immediate connection with each other. And so they are, by the coming and going tides of spirits between the two worlds. But now that the speed of light seems to be discovered to be instantaneous, it may be the communication between them is instantaneous.

When the deathless spirit has dropped its "mortal coil," and visited with electric wing the luminous,

life-giving sun and the mighty cities on its spacious bosom, and graduated in the universities of heaven, it will discover that eternity is scarcely long enough to study and enjoy the marvelous creations of the universe. It will find our world is but a floating island in the great solar sea of electro-magnetism, and the solar sea or empire of our sun is but a small province in the boundless ocean of space, hid in the infinite abyss of starry depths; that measureless immensity and countless variety reigns in the universe. Human souls will then be free as air and untrammeled as ether, and may explore the vast highways of eternity with wonder-seeking minds, and visit Jupiter with his enormous moons, Saturn with his gigantic rings, and traverse the out-lying orbs of distant Uranus and Neptune. They may then pass to other solar realms, and wander over the varied bosom of Andromeda's triple suns of blue and green and sapphire tints that whirl like globes of rainbow beauty in the azure sky, and see the double stars and multiple suns, and fiery comets with their glowing spooms, and blood-red meteors, all following harmonious orbits through the pulsing voids of space, vibrating to the rythmic cadence of electric law. All moving with tranquil majesty in the trackless seas of immensity obedient to the Omnipotent Will.

Here blooms infinite, varied life and ever-changing beauty to thrill and bless the wonder-loving soul and make melodious harmony with every pulsing vibration of their imperishable life. The universe of myriads of suns is separated by trillions of miles and scattered like lighthouses along the realms of space, as dynamos of heat and light and life, shoot-

ing with measureless speed and bound together by mutual ties as delicate and invisible as the ties of love that bind two souls together at the hymeneal altar. Such is God's universe. She is as a bride to her lover in every floating atom of space, in every circling world and glowing sphere, in every human soul and angel spirit.

As light is the great painter of the skies, and photographs all things that occur in the atmosphere of suns and planets, the aspect of the earth and the sun and the events that occurred on their surface thousands of years ago are now winging their flight through space millions of millions of miles distant. To the eye of Deity or an observer on some distant orb these events of centuries past would seem to be actually occurring or in progress. With powers commensurate with the photographic powers of light, a human soul could stand upon a distant star and follow this wonderful vision and gaze on a succession of events from the beginning of time to the present moment, and read the history of every sun and planet in the rays of light from its own atmosphere. And with poised wing in limitless space or on some far-off sun, read the mighty events transpiring on this little earth in the distant rays of light from its own atmosphere. And in the cities of the sun, the denizens of heaven may, by some marvelous appliance, so magnify the picture in each ray of light from earth and sun and planet that they may view with microscopic eye and telescopic vision all the historic scenes of every sphere, and learn the life and history of every rolling orb.

They need not visit them to see and know the panoramic history of their glowing life. And

thus they may view the varied scenes of earth. Could we transport ourselves to Alpha Lyra, Sirius or some more distant sun and could see, like them, the photographic pictures in the rays of light from earth we could view scenes that transpired on the earth thousands of years ago. Thus human souls may see and thus Deity sees the end from the beginning at all times in all spheres. And a ray of light, a drop of dew, a grain of sand or a blade of grass conveys to him a history of the world of which it is a part.

Thus God preserves in every ray of light a constant picture of the changing panorama of the universe; and in man's mind, through man's imperishable memory, He keeps a perfect record of man's thoughts and deeds, which He can unravel as a written scroll at any moment.

The future is ever present in its germs, precisely as the past is present in its fruits. And God's knowledge of the past and future is as much the subject of His consciousness as the present action of His creatures, or the primary laws He has established. He has assigned to the universe certain material and spiritual laws, and the whole scheme of the universe is so perfect it needs no direct intervention. His perfect control of matter under electric law produces the evolutions of nature that accord with His divine purpose, and His spiritual impulse directs the spiritual development of the human soul to the ultimate goal of truth and perfection to be attained in His self-luminous, perfected worlds. Thus we perceive that to the Omnipotent Ruler of the universe the infinite past and the infinite future would at all times be present, that each atom and event

would exhibit to Him at each instant the limitless past and future, giving him perfect and omnipotent consciousness and control of his spiritual and electric universe.

And even on this earth, the time may come when we can so magnify the picture in a ray of light that we may see the cities in the sun, and read the inscriptions on their walls and temples, and view the gates of pearl and the sapphire dome and diamond coronet above the Acropolis of the terraced city of the sun described in Revelations.

The soul is an invisible atom of Deity and, like invisible atoms and electricity, may pass to and from the sun in eight minutes and perhaps only a few seconds.

I reason scientifically that if invisible matter and electricity go everywhere and pass to and from the sun continually and exert their power and do not lose their natural properties or identity, it is clear and overwhelming proof that man's soul, when it steps out of the body, maintains its power and identity, and can fly with the speed of light to the throne of light and life in the luminous bosom of the all-life-giving sun.

Is it not right, by the eternal law of cause and sequence and unanswerable logic, that life should return to the fountain of life? That life, soul life and material life, which the sun nurtures, builds and vitalizes here, when its usefulness here is ended that it should return to the luminous bosom of its great mother—the source of all life, light and power; and that there it should find the great Spiritual Father, who planned and constructed this mighty machinery of worlds, or his immaculate Son and representative.

Then, by all the laws of reason, intelligence, and "the eternal fitness of things," God, the eternal, creative Spirit, should have his abode and center of life and light and power at the central abode of all life and light and power in the physical universe,—the all-sustaining, creative sun. Such accords with the eternal laws of nature and the one unchanging mode and pattern of the universe. For by the universal law of all created things, the center of physical and electric power and life is also the center of spiritual and intellectual power, and there should be the home of Deity and the promised heaven of the human soul.

The question may often arise, Does God perfect humanity and then destroy it? Does He make men of us with all the trouble and care that comes inside of seventy years, and then throw us away? I do not believe he does anything so wasteful and unjust. He has prepared a pathway to the skies and takes us to Himself. This is more rational.

Jacob saw the heavenly ladder and angels ascending and descending between heaven and earth, and Stephen saw the heavens open and Christ sitting on the right hand of God. These were not miracles in the supernatural sense; they were simply a larger vision, an expansion of electric and spiritual power under the rapid evolution of natural law. All great seers and prophets have had the same clairvoyant power.

At the birth of our planet, the stars sang together and all the Sons of God shouted for joy. At the birth of Christ the angels sang for the shepherds on the plains of Bethlehem, and they visited Abraham and Lot, and Joseph and Mary, and ministered to

Christ when he was weary and famished in the wilderness. They carried John in the spirit to the great and high mountain in the sun which was to him a new heaven and a new earth and showed him the great city of God, and they have borne millions of bright human spirits along the electric highways of the skies to the celestial mansions of the blest. So will they wait and guide us through the dusky borders of mortality, along the shining pathway to the sun, and welcome us to the delights of its celestial cities. And we shall see in the hour of dissolution the ladder Jacob saw reaching from earth to heaven on which the angels ascend and descend, and we shall see the vision martyred Stephen saw when the heavens opened, and the vision St. John saw when he gazed on the New Jerusaleum.

And this electric stairway between heaven and earth is so real, sure and strong, that the weakest spirit cannot lose its way or stumble or fall. It has the lightness of air and the strength of adamant and is as eternal as the stars. Millions of millions have trod its pathway of viewless power that no steel or adamant could brake, and none have failed to reach the heaven that it links to earth.

The creature whose intelligence measures the pulsations of molecules and unravels the secret of the whirling nebulæ is no creature of a day, but the child of the universe, the heir of all the ages, in whose making and perfection is found the consummation of God's creative work.

God is a spirit and man is a spirit, and spirit power is the supreme sovereignty of the universe. And the soul of man can command electric energy to bear it with swift wings and tireless feet along

the electric pathway to the luminous bosom of the sun, to the celestial cities of his future heaven.

And the angels will be our guides and direct our faltering spirits along the electric pathways to the stars, and light the shining boulevards of eternity, and lead us to the golden streets and crystal palaces of heaven. And they will escort us into the diamond banqueting hall of the King of Kings, and we shall feast on angels' food, and sip nectar and ambrosia from the table of the God of Gods.

And the angel choir shall take down their celestial harps from their panels of amethyst, and with deft fingers and entrancing voices sing us the old, loved melodies of heaven, and put a new song in our mouths, and we shall join the heavenly jubilee of eternal life and glory.

"When the daylight trembles into shade,
When falls the silence of mortality,
And all is done, we shall not be afraid
But pass from light to light; from what doth seem
Into the heart and heaven of our dream."

CHAPTER XV

THIS ELECTRIC UNIVERSE IS SELF-SUSTAINING AND ETERNAL

THE natural beauty and utility of the world is vast and varied. The grandeur and strength of the universe is boundless and enduring. Nature is Deity, thinking in visible thoughts of beauty and power, and speaking in visible tones of life, motion and harmony.

All things in nature combine beauty with utility and while full of change are constant and enduring. The same electric laws, force and substance which gives luminous brilliancy to countless suns, and paints the aurora and the rainbow the rosy hues of dawn and the crimson glories of sunset, give color to the ruddy cheeks of youth, and red corpuscle to the arterial blood that brings health and strength to human forms.

These same electric laws, force and substance hold their sceptre of power through all the universe. Under electric law atoms and molecules embrace each other and evolve visible forms of life; and suns glow with warmth and light, and keep their appointed distances in the circling mazes of the sky. And by the grasp of electric energy these life-giving suns carry their family of life-bearing worlds upon their mysterious voyage through the realms of measureless space.

All nature is a visible expression of Omnipotent

Deity, all the universe is a symbol of creative power and wisdom which is boundless and enduring, and proclaims that our world, the sun and the universe are eternal and enduring.

The question of the continued existence of our solar system is a fascinating subject to most of our astronomers; they seem never to be weary of looking forward to a time when the light of the sun will expire with age, or it will be destroyed by some great catastrophe. I have no such apprehensions. First, because in the six or eight thousand years of human history on this planet there is no record of any sun or star being blotted out, or any planet being destroyed. The sun, stars and planets are substantially the same as they were when Babylon flourished, when Abraham was a sun worshiper, and when the angels sang on the plains of Bethlehem. As far as human knowledge and science goes, not a single star has faded from the glittering hosts of night's jewelled crown.

Second, because the same electric force that started suns and planets on their grand velocities and fixed their orbits is not only an attracting force, but also a repelling force of marvelous power. And while suns and planets attract each other they also repel each other, and make each keep their respective distance under the law of electro-magnetism by which opposite poles attract and like poles repel each other. If you place the opposite poles of a horseshoe magnet together they will attract each other and cling together until a superior force overcomes their mutual attraction; but if you reverse them and put their like poles together, they will not cling together, but will repulse each other.

In chemistry molecules of opposite polarity unite, and this is called chemical affinity; molecules of like polarity will not unite, and this is called chemical repulsion. Magnets attract only when their poles are reversed, or when they are oppositely electrified, and suns and planets do the same. The sun as the great central magnet, or electric generator, has the power both to attract and to repel. The planets are kept in their orbits by both the sun's attraction and its repulsion. In the summer, when the earth gets four millions of miles nearer the sun, there is a repelling force from the sun that sends it off again, or it would continue to approach the sun until it would fall into his spacious bosom. No law of gravitation or balancing force of planets could do this. The centrifugal force of electric repulsion in the sun does for the earth what all the balancing force of the planets could not do if they were all swung in the circling orbit of Mars.

The sun, by this electric propelling force, throws off the comets which approach it. This is proven by scientific records in many instances for centuries. By this same propelling force the sun holds off the swift leaden planet Mercury. By this same electric repulsion the planets prevent their moons from falling back onto their surfaces.

These moons are the same material and electric composition as the worlds from which they come, and, as like polarity repels, they are thus kept in their orbits. There are estimated to be eighteen to one hundred millions of suns in this universe. Can any one believe they are kept in their places by a mere balancing force?

They are held by electrical repulsion as well as by

electrical attraction. There may also be belts or zones of ether with the proper electrical vibration or condition in the orbit of each planet and satellite which hold them with giant grasp in their allotted places.

And every sun system may have its own peculiar electricity, which has a repulsion for all other systems and holds each in its proper place. All these things are possible and probable under the theory of electrical creation. As twenty-eight currents of electricity can pass over the same wire at the same time, fourteen each way, how many kinds of electric currents may the universe possess? May not each planet have its own peculiar current, and its own peculiar attracting power, and the sun give each a different electricity?

While each sun system, with its revolving planets, is held together by mutual electric attraction, the eighteen millions of sun systems are prevented from coming in collision with each other by the law of electric repulsion. This would prevent any one system from trespassing upon the domain or territory of another, and permit each and all to move freely among themselves and change places without danger of trespass or collision.

In case of too near an approach to each other the law of repulsion would drive them off. This would avoid the necessity of a central sun, which probably does not exist or it would be visible. If all these systems were positively magnetized or all negatively magnetized they would repel each other. This law of electrical repulsion would increase the nearer these systems approached each other, and this increasing power would send them

further away, and forever prevent discord and collision. This is why there is no discord in the fields of heaven and harmony reigns triumphant.

Electric repulsion is all that prevents these almost infinite sun systems from coming into conflict with one another, and ending in aggregate and ruinous collision, and reducing the universe to a heterogeneous mass of discordant spheres. No law of gravitation could prevent such a wreck and ruin of the universe. On the contrary, the size and weight of every sun and star that floats in the broad expanse of ether would under the law of gravity tend to bring about just such a universal catastrophe.

If the boasted law of gravitation prevailed to-day, or ever did prevail, such would be the disastrous results. The law of gravitation tends to aggregate all bodies into one. If the universe was under the dominion of gravity there would be but one vast globe in all the universe, and if there was a man on it there would be but one enormous giant. Newton's law of gravitation is "large bodies attract small ones." If that is true, then all small bodies would fly into the arms of the larger ones, and the process would continue until the largest body had them all, and there would be no smaller ones to attract. This is a fair analysis of the law of gravitation.

As to the rule that matter and worlds "attract each other inversly to the square of the distance," that rule could not exist but for the law of electric repulsion. That rule is very near the law by which matter falls towards the sun by electric attraction. But it is not the law of orbital energy by which planets are kept out of the sun. Neither is it the

law by which satellites are kept from falling into the planets around which they revolve.

The weight that falls to the earth by attraction may be lifted by dynamic repulsion. Therefore the law of repulsion is as necessary as the law of attraction. Gravitation ignores the laws of repulsion. With gravity only all spheres would fall together in a common ruin; with repulsion only they would dissolve into ether; and both of these forces, normally active and balanced, are necessary to preserve the universe.

Therefore, I contend that our earth, the solar system and the universe is self-sustaining and eternal in duration, because of the ever-active omnipotent force of electrical repulsion in sun systems, in suns and planets and their satellites.

Our wise astronomers for two centuries have bestowed upon so-called gravitation all the divine attributes, and thrown around it the halo of a worshiped divinity; and ignored its twin brother and dual force, repulsion. This was excusable before the discovery of electricity and its marvelous forces as a new causation. But since then it seems the blind folly of stupid conservativism that would cling to old traditions and antiquated authority. They recognized the law of repulsion in matter, in gases, in gunpowder, in volcanoes, in steam, in dynamite, in perfumery, in everything in the earth, but denied its operation in the sun and planets, and sidereal space.

This ever-active omnipotent force of electric repulsion keeps all sun systems from coming together or trespassing upon each other's vast domains. There is electrical repulsion as a great barrier be-

tween them to hold them apart. Why? Because they have like polarities or become alike electrified as they approach each other. This without any other reason is sufficient to forever prevent collisions between the sun systems of the universe.

Electrical repulsion keeps our earth and the planets from falling into the sun. Why? Because our earth and the planets, when they approach within a certain distance of the sun, may become similarly electrified to the sun, and are thrown back to their proper and balanced orbit. Electrical repulsion keeps all satellites from falling into their primary planets. Why? Because they have like polarities, and are positive or negative like their primaries, and repulse each other. Thus each and all the suns, planets and satellites continue in their orbits of balanced forces, and will always continue and are as eternal as the laws of electro-magnetism that created and upholds the universe.

The same law applies to comets. Why does the comet, when it approaches just so near to the sun, dart away so quickly? Because it becomes alike electrified as the sun, and the law of repulsion strikes it like the blow of a mammoth triphammer and hurls it in the opposite direction. This is one reason; there may be others, for the laws of repulsion are as many and various as the laws of attraction.

The scientists in all ages have been fascinated with fearful, grim and dismal pictures of the end of the world. Like the theologians who delighted to paint the tortures of the fiery tophet of their imagination, the scientists have exhausted their wildest fancy in picturing the sun consumed with

fire, the earth melting with fervent heat and the final "wreck of matter and the crush of worlds."

The latest display of dismal and excessive fancy on this subject is from the prolific pen of our most eminent and worthy astronomer, Prof. Simon Newcomb. It is to be found in McClure's Magazine of May, 1903, which I have just read, entitled "The End of the World." It is a well written, imaginative story or article, embracing his theory or hypothesis of the cause and manner of the world's destruction.

I admire his scholarly style, his great learning, and splendid fancy, and if I believed in the scientific theories and traditions which he champions with such an able pen, I should say it was a masterly presentation of what would occur in sun and earth at some indefinite future time. But as I have discarded the old scientific traditions I cannot accept his theories or his fancy picture. It is too dismal for my optimistic conception of what has occurred or what will occur in this vast and mighty universe.

He is a worthy successor of Newton and La Place, for he has a vigorous imagination, which easily scans the future and presents what I deem antiquated theories, sustained by traditional facts.

Each person lives in a different world and sees a different universe, according to his knowledge and imagination.

The universe Ptolomy saw was different from that of Copernicus, and Newton's different from both, so my conception of the universe is different from that of Prof. Newcomb's. Imagination is a creature of education and converts knowledge into utility, and reasons from the known to the unknown, and

is the telescope of futurity and the microscope of past centuries.

I am a great believer in imagination or ideality as the highest gift of Deity, and accept Napoleon's statement that "imagination rules the world." I believe no man can be a great astronomer without it, and the tallest and broadest enlightened imagination will naturally have the best conception of the complicated motion and grandeur of the universe. Tyndal in an address at Liverpool in 1870, said, "There are tories even in science who regard imagination as a faculty to be feared and avoided rather than to be employed. In fact, without this power our knowledge of nature would be a mere tabulation of coexistence and sequences; the soul of force would be dislodged from our universe; casual relations would disappear, and with them that science which binds the facts of nature to an organic whole."

This is nobly and truly said, for all progress is heralded by theorization; which is an intelligible explanation of things, and serves to relate cause and effect. It distinguishes the human being from the animal, the civilized from the savage, the wise and learned from the ignorant and foolish. Herbert Spencer said, "In the formation of a theory we have the highest condition of the human mind." And Holder, in his life of Darwin, says, "Darwin was greater than others, because he had the genius of scientific hypothesis." Therefore I am proud of Prof. Newcomb's hypothesis of the cause and manner of the death of the solar system, though I do not accept his theory or his conclusions. I am glad he is not one of those scientists, who said in the New

York Journal not long ago, that the only thing of value to science was the tabulation of facts. The mere tabulation of facts would be of as little value to the world without causation, theory and hypothesis, as the Egyptian hieroglyphics before the discovery of the Rossetta Stone.

Let us see what the learned astronomer, Prof. Newcomb, says. He projects himself into the future and starts out by imagining that from the central observatory in the Himalayas, "Mars is signalling a dark star." This, he says, was after "the world had long been dull and stagnant." Now, I protest that this world will never become dull and stagnant, nor any part of this electric universe, but all will go on steadily progressing to more perfect conditions. Here is where our theories clash on the first sentence.

Then he proceeds to tell the kind of dullness and stagnation that existed. He says almost every scientific discovery had been made thousands of years before, and all inventions had been perfected, and everything went on as by machinery. The peace of the world was settled and the time when men fought and killed each other in war lay far back in the mists of antiquity, and the newspapers chronicled little but births, marriages, deaths and the weather reports. "Only one language was spoken the world over, and all gentlemen dined in blue coats with gilt buttons and wore white neckties with red borders."

Now I cannot accept this as a true picture of our earth at any time in its future, or the hypothesis of human stagnation as possible or probable. I do not regard the world's peace, and perfected machin-

ery, and "blue coats with gilt buttons and white neckties with red borders," as evidence of dullness and stagnation. And I cannot believe the newspapers, whose proverbial energy is perennial, will ever get to the low ebb of stagnation he describes.

But to the more important points. Three thousand years before this time messages had been successfully interchanged with the inhabitants of Mars, and now this message of "a dark star" arrives from Mars, which excites the astronomers, and later the people, until the whole world is in a frenzy of terror, apprehension and despair, watching this terrible star, which continued to increase.

The people of Mars are also "in a state of extraordinary excitement," and our astronomers are much puzzled about the orbit of this dark star, many times the size of our earth. Then the Himalaya observatory sends out the startling announcement that, "the dark star has no orbit; but is falling toward the sun with great speed."

Then a professor in physics sees the dangerous possibility of its collision with the sun, and has an immense vault, which had been previously built for scientific experiments, a hundred feet under ground, stored with provisions, etc. In this safe retreat he hides himself and his assistants when the dark star strikes the sun, and the fearful conflagration of the sun and earth occurs. And when the sun and earth were burned up by the collision of the dark star with the sun, they, like Noah and his family, were saved from the general destruction. The description of the melting of the houses, stones and all combustible material on the surface of the earth, the anguish and despair of the thronging multi-

tudes, and the destruction of the great city of Hatten, built on the ruins of the old city of Neeork, would duplicate the horrors of Dante's "Inferno." The illustrations are equally horrible and terrific, and both are calculated to shock the mind of the reader and retard mental composure and æsthetic culture.

He states, in the words of the professor, his theory, thus: "My theory is that if one of these dark objects chances to strike a star it bursts through its outer envelope and sets free the enormous fires pent up within." These pent-up fires within the sun, he claims, are going to blaze up more furious and be the cause of this dread catastrophe of ruin and death to the sun and planets. With all respect to this eminent astronomer, I insist, first, there are no pent-up fires in the sun. Second, no dark or light star, planet or globe can ever fall into the sun, because the law of electric repulsion in the sun will send it off, as it does the comets, in an opposite direction; besides this same law of electric repulsion will forbid any such object from coming into the solar system.

He says this dark star, many times the size of our earth, striking the sun, would destroy it and our earth and planetary system by fire. All life and combustible material, including stones and the surface of the sun and planets, he insists, would be utterly consumed by the heat engendered by such a collision. Now, I contend, in the first place, that such an event is virtually impossible; and if it were possible, a star of many times the size of our earth, coming in collision with the sun, would make little more impression on it than a dozen hogsheads of dynamite thrown against the surface of the moon.

Both would do great local damage to the spot and vicinity where they struck, but neither would produce any great general disturbance and injury to these orbs. Many times the size of the earth would mean naturally something like a dozen times the size of the earth.

Let us estimate the general result by comparison. The sun is one million three hundred thousand times larger than the earth. It is so large that if we could drop our earth into the center of the sun, our moon, which is two hundred and forty thousand miles from us, would only be about half way to the circumference or outer rim of the sun. Now, a star many times the size of our earth, striking the surface of the sun, would create great heat by the compact, and great distruction in the locality where it struck; and would likely imbed itself in the sun, like large meteors do on the earth, and become a good sized mountain on the sun's surface. It would not increase the electric currents or radiation, of the sun sufficient to melt the snow on the mountains of the tropics or set fire to a haystack on the earth. Its effect on the earth would not be excessive in temperature, and would be very temporary. For my theory is that the sun sends only such currents of electricity to the earth as the earth draws and demands by its opposite polarity.

Only a great sun a thousand or a million times larger than our earth would make any great impression on the sun in case of a collision; and then it would not result in its destruction, or that of the earth and planets. Its size and power would be increased, but that would not necessarily increase the heat of the planets, if, as I contend, the

sun could only send them the electric currents the planets draw by reason of their opposite polarity; just as a receiving station of wireless telegraphy receives only the electric currents intended for it because of the peculiar attracting power it possesses.

I am aware that the recent flaring out in light, and increase in size of the star Nova Persei in the constellation of Perseus, has given plausibility to the conjecture of some astronomers that it was caused by a collision between two suns. But I think the better opinion is that this star is a new sun, partly nebulous and in its formative state; and that it was visited by a great cloud or swarm of meteors, which produced the great illumination which flared out into space for a few days and then subsided.

Its former small size, to which it has returned, and its present nebulous condition, or the nebulæ that surrounds it, seems to fully justify this conclusion. I do not believe there ever has been or ever will be a collision among the suns or planets. The wisdom of the Creator, as manifested in the great universal laws of electro-magnetism, forbid it. If such a catastrophe was likely ever to occur, it would have happened many times since the history of the race began, and we would have had many undoubted demonstrations of the direful uncertainty of the life of the suns and planets and the varying chances and unstable condition of the universe.

Let us hear the conclusion of Prof. Newcomb's hypothesis in the last words of the last man on the earth, in the person of the professor of physics: "Such is the course of evolution. The sun, which for millions of years gave light and heat to our

system and supported life on the earth, was about to sink into exhaustion and become a cold and inert mass. Its energy could not be revived except by such a catastrophe as has occurred. The sun is restored to what it was before there was any earth on which it could shed its rays, and will in time be ready to run its course anew. In order that a race may be renewed, it must die like an individual. Untold ages must once more elapse while life is reappearing on earth and developing in higher forms."

This is the present accepted scientific theory. But is it right? According to my conception, it is not. The sun is not growing old, or cold, or feeble, nor can it "sink into exhaustion." Nature, on this earth, under electric law and process, is ever renewing herself. And it is the same in all suns and planets. Nature's curriculum of eternal processes is continuous change and evolution. Her processes of renewal and purification are so perfect here on earth, that our most luscious fruits and vegetables, and our most beautiful and fragrant flowers come from the rank manure of the farmer's stable. The fertilizers of our soil are the decayed excrement of bird and beast and the most loathsome decaying elements; yet, through nature's evolving and purifying process they become wheat and corn, plant, vegetable and flower, and our most wholesome, acceptable and nutritious food; and if we live many years in the same neighborhood we eat the same food over and over many times, and the cattle and all living creatures do the same thing.

The atoms that compose our bodies have been used over and over again many times. They have been in the bodies of millions of men and animals,

plants and vegetables before we used them, and will be in millions of bodies yet uncreated. They have been tossed by winds, hurled and threshed about by tornadoes and cyclones, drowned in the sea, and buried in the earth and often digested by other animals before they came to rest under balanced electric forces in our bodies.

Every atom in our bodies have been to the sun and back billions of times and will be again. They have been renewed by the electric currents of the sun, by the energy of the soil, by the electro-magnetic ether of space, and are as eternal as law and destiny.

In like manner, the elements of the sun are constantly being renewed and invigorated, and he has an area of six billions of miles in diameter from which to draw virgin atoms, and like a great sea of inexhaustible force, it is the fountain from which he receives his measureless power and indestructible life and energy. For he is the central dynamo and electric heart of the solar system, and with his family of planets is floating in a boundless sea of electro-magnetism that has no limit of life and energy. The sun may send a different kind of wireless electricity to each of the planets, and each of the planets may return a different kind of electricity to the sun. Thus these electric currents may pass and repass between sun and planets and be re-energized and used over and over again, just as the atoms of our bodies and all earthly molecules are used over and over again.

Thus the sun constantly renews and invigorates himself and all the elements of the solar system, and can never come into "a state of exhaustion," as so graphically described.

But this vast electric universe is stable, enduring, self-sustaining and eternal; and no law or act of conflict among its millions of suns and planets has ever been discovered, or is likely ever to be, the conjectures and sophisticated prognostications of pessimistic scientists to the contrary notwithstanding. Can any reasoning, common thinker, aside from the scientists, after viewing our moon swinging around our earth, as it has done for thousands of years, only 240,000 miles from us, without approaching a mile nearer the earth in all that time, believe there is any danger of a collision between them? The law that holds them apart thousands and millions of years will continue to do so; and their collision is virtually a matter of impossibility until the electric laws of the universe are abrogated. Can any one believe that the little leaden planet Mercury that has been swinging so close around our enormous sun—only thirty millions of miles from it—for millions of years could keep its constant orbit unless there was an irresistible law, as omnipotent and changeless as Deity, that has and will forever keep it from falling into the sun.

Look at the planet of Mars with two satellites, of Jupiter with six, and Saturn with eight, flying swiftly around their primaries, all only a few thousand miles from their surface, and some of them going in different directions—could any balancing force, any law of gravitation, keep them from falling into their primaries? Every one of them is a contradiction of the law of gravity, and puts the stamp of falsity on all its claims.

But they all show there is a law which defies so-called gravity and is a correlative force, and that

is the law of electric repulsion; and it is the cosmic force which, with electric attraction, has built the universe as a vast electric machine, and they will forever preserve its integrity and existence, and the sun, earth and universe are eternal.

The world moves; knowledge increases, and science is gradually broadening her conception of the harmony and endurance of the universe. The theory of dead matter and blind force has been relegated to the obsolete and discarded past, and been replaced by the recognition of ever-present life and infinite grades of consciousness.

The vast and varied factors in nature's problems of eternal destiny point to our sun and earth as a present existing and unending reality. Nature builds up, tears down, and reproduces her organic forms on the surface of planetary globes, but she does not destroy her great sun magnets and world magnets in the same manner, as many of our scientists think. There is a great difference in the powers and functions of suns and planets and the creeping things on their surfaces. Suns and planets, after they have attained their matured and balanced powers, are immortal, and creating, enduring and perfected organisms; and, like man in his immortal spirit, they have attained to eternal life, and neither death nor ruin can ever come near them. Suns and worlds in their electric energy have the powers of creation, and as the creator is always superior to the created, they should not be judged alike. Therefore the changing and transitory nature of many things on the earth's surface is no proof that such will be the earth's destiny. On the contrary, every ligament of force and power in this electric universe is

pledged to secure the continued and endless duration of our sun and solar system, including our earth. And timorous humanity should no longer shrink in horror at its prospective wreck and ruin.

May the truth prevail and man's mind be freed from the horrors of an anticipated destruction of the sun and earth, and the optimistic joy of imperishable life and love here, and in the all-glorious sun hereafter brighten the terrestial existence of humanity. All hail! thou life-giving sun!

Sweep on and ever while the cycles roll
Thou wandering orb of luminious sod!
Thou blazing banner of the mighty God!
From Creation's center to its farthest pole,
Speed on and on in thy unknown track;
But the hand that send thee can draw thee back,
And teach thee the way when thy footsteps stray,
As He doth the wanderer.

Like a silent thought from Creation wrought,
Thou speakest a language weird and strange
Of the breadth of space and the speed of change,
And the wondrous dream that the ages taught;
That from star to star, and from sun to sun
The soul shall pass while the cycles run
Renewed in its youth, gleaning wisdom and truth,
God's wisest wanderer.

The living shall die, and the dead shall live,
And the mystery deepens on every hand,
And the worlds shall stay, and the soul shall stand,
And a lesson of truth shall all things give.
And a mystic touch hath a world to a world
And the banners of God are ever unfurled
In creation's face teaching truth and grace
To the wanderer.

CHAPTER XVI

ARE ALL SUNS AND WORLDS INHABITED?

ARE all suns and worlds inhabited? This has been a puzzling question to the astronomers, who have had various opinions on the subject. From the laws of electric creation, as I understand them, the affirmative answer seems reasonable and natural. But as we cannot visit these suns and worlds in the flesh, my answer must be formed from the operations of the laws of electricity as applied to this planet.

Prof. Newcomb says astronomers have no means of knowing as to the inhabitability of distant orbs any more than other persons, and that we can only reason cosmologically on the subject, and, reasoning thus, he thinks only the earth and possibly Mars are inhabitated.

Prof. H. H. Turner, professor of astronomy at Oxford, England, in the Fortnightly Review of April, 1903, in combating Alfred Russell Wallace's theory that our earth is in the center of the universe, and the only inhabited world, says: "Why should not any one of the suns possess planets as well adapted as we are to develop high forms of organic life?" He seems to think no valid reason can be given why there are not many inhabited worlds as favorably situated as ours to produce and maintain organic life. And I fully agree with

him, and go a step further and say there are many reasons why nearly all suns and worlds are inhabited. Reasoning from electric law and cosmological facts, our world, and its laws, forces and creations, should be a fair sample of the laws, forces, and creations of all worlds and planets. This is in accord with universal chemistry, which teaches that the same laws and substances exist throughout all the realms of space.

In reasoning on the formative period of our world, we found the electric current to be the first form of matter and force, or the first form of creative manifestations in space. These currents antedate all suns, worlds and visible objects. We also found that all visible forms of matter were the aggregation of billions of invisible atoms, and all visible matter and forms were simply the outer garment and scaffolding of these invisible electric forces; that force follows the law of motion, and atoms the law of form obedient to the lines of motion. The second step in planetary construction was the arrangement of the atoms into crystalline formation, due to opposite currents of electrical motion, and to atomic balance. This produced the rock-ribbed foundations of the earth and solidified it into a vast magnet of marvelous force and power.

Then when the crystalline rocks and metals were settled into a crystalline globe throbbing with electric power, vegetation came and the electric life-cell was formed as the first step towards organic life. Then came the formation of nerve tissue as the basis of form structure and the evolution of microscopic life which developed under electric energy into all forms of animal existence which now in-

habit the earth. These were all formed and perfected through ages of response to the varying electric currents of life-giving power.

Then the animal form evolved a brain, and acquired the sense of feeling and sight and hearing by reason of the electric currents that impinged on the sensitive tissues of the brain, and animal instinct was slowly and gradually developed and the animal organism raised to the highest grade of the perfected mammal. All this was done under electric law by magnetic energy. Then the Creative Deity said, "Let us make man." And it is likely He took a perfected mammal, enlarged his brain-pan, stood him erect to front the stars, and breathed into him an atom of his own spirit, "and man became a living soul." The psychic power of glowing thought and reasoning mind, inspiring hope and heaven-bound love, and truth, and language, music, poetry, and dreams of heaven, were implanted as a celestial fire in his deathless spirit. This is man,—the soul, the spirit, the divine, eternal spark of Deity himself—not the body; that is merely the overcoat of atoms for the spirit, the temple for the soul, the house in which it dwells.

It will be seen from the foregoing that electricity is the creative, evolving force of the universe, the word of omnipotent power, the creative machinery of suns and worlds. That it creates suns and worlds and all animal and vegetable organisms, that it can evolve all forms, and give animal instinct as the result of balancing the experience of one sense with another through long ages of experience.

But it cannot create mind, soul or the spirit of Deity. It could not create man as a psychic being.

It could organize his body, but it could not confer on him a soul. Electricity does not rob God of power; it is his creative machinery, and the right hand of His power, and, guided by His omnipotent will as the law of nature, it can and does evolve suns and worlds and all organic life. But not spirit-life—not man.

Moses and the Bible were inspired or they could never have shown so clearly the nobler creation of man, and his inherent sovereignty over the world, and dominion over all the animal creation. I like that statement, "And God said let us make man." Electricity was the word of His power, the creative agent of His will, which is the law of nature. It could create a sun, a world, a universe; it could give sense and feeling to insensate dust, and evolve and fashion man's body as a house suited for his earthly habitation, but it could not furnish a tenant or evolve a soul. The God-father and the God-mother alone could do this, and make man a spiritual and eternal being.

Now, I argue that if electricity created this earth with all its complex elements and organic forms, it also created all suns and worlds and all the machinery of the universe by the same process, and has endowed every rolling sphere in space of sufficient size and power with vegetation, and all the varied forms of animal organism. Is not this a rational conclusion, since it has been demonstrated by universal chemistry and spectroscopic analysis that all laws, force and substance are the same in all suns and worlds and throughout the universe? Is it reasonable to believe that the electric currents and magnetic energy of our earth could evolve

billions of billions of little living creatures which float in the air thicker than motes in a sunbeam, that swim in the waters so abundant that there are millions in a raindrop, that penetrate all vegetable and animal substance and organisms, that course through the veins of our bodies by the billion, and eat our food for us that we may digest it better; yet in other suns and worlds produce no such results? I cannot think so.

The animalculæ are so small that Ehrenburg estimates that five hundred million of them exist in one drop of water one twelfth of an inch in diameter; that not only the blood, but the flesh and muscles are also composed of infinitesimal lives, each cell possessing a distinct life of its own.

Binet describes man as a colony of protozans; and according to these two biologists he is a walking Chinese Empire, when you consider the microscopic beings in his body. Besides our bodies and those of vegetable and animal organism that are thus honeycombed and flooded with animalculine life, there are countless millions floating in the air, swimming in the water, and buried in the dust of the earth.

So that organic life is everywhere present on the earth, in invisible or visible form. And the invisible forms of life of the earth everywhere surpasses the visible forms millions of millions of times. Just as the invisible matter in the world and the universe surpasses the visible countless billions of times. Thus the natural, spontaneous production of life and life forms in myriads everywhere on this earth emphasizes the reasonable hypothesis that they are evolved on all suns and planets.

This shows the unity of matter and life. Wherever there is matter there is electric energy and life-force, which evolves infinite grades of life-forms. Prof. Buchner asserts that "spectrum analysis has brought about the highly important conviction of the unity of what is to us the visible universe." And Prof. Shaler of Harvard declares, "the unity of life is the greatest discovery of the nineteenth century." The infinite diversity in nature first fixed the attention of investigators; now its infinite unity is the marvel which excites their wonder and admiration. Now the unity of matter, force and physical life are accepted by the ablest thinkers.

This all tends to prove the inhabitability of all suns and worlds. Prof. Huxley put himself on record as believing in intelligent organic life in other worlds, in the following vigorous language: "Looking at the matter from the most rigidly scientific point of view, the assumption that amid the myriads of worlds scattered through endless space there can be no intelligence as much greater than man's as his is greater than a black beetle's, is not merely baseless but impertinent. Without stepping beyond the analogy of that which is known, it is easy to people the cosmos with entities in ascending scale, until we reach something practicably indistinguishable from omnipotence, omnipresence, omniscience.

"If our intelligence can in some matters surely reproduce the past of thousands of years ago, and anticipate the future thousands of years hence, it is clearly within the limit of possibility that some greater intellect even of the same order may be able to mirror the whole of the past and future."

This is a masterly statement that demolishes

Alfred Russell Wallace's little arguments like a trip-hammer would an eggshell. Ruskin also saw much good in the idea of life in other worlds above us, "in creatures as much nobler than ours as ours is nobler than that of the dust."

When once the unity and universality of force and electric life are made clear, and spirit and psychic life in their immortal destiny are made manifest, as thinking creatures we are led upward to a larger development of life and power, dominated by a supreme intelligence we call Deity, Infinite Goodness and Spiritual Father. Then we remember that he has assured us in the sacred oracles, that "we shall be with Him and shall be like Him," and that there are many mansions in the skies.

Our scientists tell us there are living creatures so small and so numerous that it would take millions of worlds like ours to support a human population equal to the number of these creatures that can live and move in one cubic inch of space. Some of these multiply at the rate of one hundred and seventy thousand millions in a hundred hours. And I say every one is a tiny electric machine.

The electric currents that built our world from invisible atoms and evolved the complex substances of which it is composed, and the myriad forms of organic life that exist on its surface will fill other worlds with countless forms of organic life. For in the great electro-magnetic sea we call ether and space, in which all things float or exist, and which permeates all form and substance, there is a boundless reservoir of electric life which will blossom into infinite grades of physical organisms wherever the surface of suns, planets and satellites have living

environments of soil, light and electric currents. Even the soil of our earth maintains life because it is living matter itself. And some forms of life will exist without light or soil. This is the electric universe in solution, the life-giving sea of all form and substance.

Oh, what a miracle of wonders! From this marvelous reservoir of life, force and substance each created thing draws the elements of its growth and existence. And each draws from the same source that which its nature requires. The oak draws from the same soil and air as the hickory, the rose, the apple tree and the poison ivy. But the oak converts all the substance it gathers into the natural fibre of the oak, the hickory into the natural fibre of the hickory, the apple tree converts it into the luscious fruit of the apple, the rose into the delightful perfume which regales our senses, and the poison ivy converts the same air and soil into deadly poison.

This is the marvel of electric law and energy. How does it do it? It does it, I contend, by the law of magnetic currents under the control of organic affinity. The Bible states this law in a little different form when it says God caused every tree and shrub and created thing to bring forth seed of its kind. Man, like all nature, also draws from one common intellectual and moral reservoir. And while some draw inspiration and goodness, others draw poisonous evil, or, rather, convert the good they draw into evils. And each brings forth of its kind.

I do not believe with Prof. Newcomb that, "in order that a race may be renewed it must die like

an individual." Or that the Creative Power, after destroying our earth, "will await with sublime patience the evolution of a new earth and a new order of animated nature."

The Creative Power has surely as much sense as an ordinary man, and no man builds and perfects a fine piece of machinery, or a magnificent mansion to tear it down, that he may "wait in sublime patience" the building of another to take its place. We should give God credit for ordinary business sense in the construction and preservation of the universe, which generally seems to be denied Him by His thinking creatures.

If Creative Wisdom has the power to build worlds, He has also the power to preserve them; and, having that power, to allow them to go to decay or be destroyed would be the perverse folly of a malignant demon, not a beneficent Creator. The same is true of the destruction of a race. To create, build up, enlighten and perfect a human race, and then destroy them and their perfected world, would be a greater crime than it is possible for man or devils to perpetrate. I have a better opinion of Deity, a nobler conception of His justice and goodness than that. I believe in a God who cares, not the modern God of the atheistic majority, as Mr. Walker says, "who does not care." A God who does not care means anarchy and chaos. It means the obliteration of all law, all moral forces, all religious conceptions, all stability and consistency in the government of the universe. Why, the very air we breathe, the sunshine that gives life, the regular and constant return of day and night, of seasons, years and months, proclaim a God who cares. Every

smiling human face, every generous impulse and noble thought, every worthy deed, every fragrant flower, waving field, and golden harvest testify to a God who cares.

But what of the "red claw" of the tiger. What of the big fish that eat the little ones, or the destruction of life by flood and storm, or human trials, sickness and death? Are these things consistent with a God who cares? They may be. The tiger devours to appease his hunger, the big fish eat the little ones for the same purpose, and both obey the law of self-preservation and the survival of the fittest. These two laws are necessary to preserve the life of their kind, and perfect their species for the benefit of mankind. It seems a sad spectacle to see the strong destroying the weak, but it is in the earlier stages of existence the only way under the law of evolution to preserve and improve the best of each species, and is a kindness and a blessing in the end.

As to the destruction of life by flood and storms, these are nature's efforts to preserve the equilibrium of her mighty forces, and where a few are injured, millions are benefited and blessed. And as to man's sickness and tribulations, they are one-half imaginary, and a half of the other half are the result of their own folly in the violation of the laws of health, and the remaining one fourth are disciplinary for the purpose of developing character, which is an ample reward and compensation.

As to death, it is as painless as going to sleep; it is the dread of death that hurts. And if it is the transition process, as millions believe, by which souls drop their brief tenement of atoms, and soar

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on tireless wings to celestial realms, then it is not a curse but a blessing, especially to the aged and decrepid, for whom life has no charms.

Will man never cease slandering the good Deity, and libeling the beneficent Creator of all good? With most people the fault is not with the world or controling providence and Deity, but in themselves. They make their own world in their own mind and then find fault with it as if it was a reality.

Albert Russell Wallace, in the Fortnightly Review of March, 1903, in a labored article of great length, undertakes to carry the world back a thousand years to the time when man thought the earth was the center of the universe, and the stars were little openings or golden nails in the crystal vault of heaven. He says we are at the center of the universe; that our sun system belongs to a constellation situated near the center of the Milky Way. This may be true, and it is not worth disputing, for if we are at the center now—as our system travels 420,000 miles a day—we were not there a thousand years ago, and in a few decades will be far away from it. As we keep moving all the time, and do not get off at this central station which he makes so much of, I see nothing gained or lost if it is true.

But in order to show that it is central, he must limit the universe and give its circumference, metes and bounds. This is an immense undertaking. If our universe is limited—and Prof. Newcomb thought so a few years ago, and held it was in the shape of a circle or disk, which was about thirty thousand light years in circumference if true, then the light from the distant stars have been traveling

thirty thousand years in order to reach us, and they must be millions of miles from where they seem to be. Thus the center of the universe is constantly changing, and it would take omniscient wisdom to tell where the center is, and then it would not remain the center many hours. This would be true whether the universe is limited or unlimited.

Mr. Wallace says, "The supreme end and purpose of this vast universe is the production and development of the living soul in the perishable body of man." If he had said that was the supreme purpose of the earth, I would have agreed with him.

But since he makes man's development the supreme purpose of the universe and says all other worlds are uninhabited, I am forced to disagree with him. He says there are one hundred millions of stars and planets in the universe, yet he depopulates them all for man's benefit, and then fails to show how man can be benefitted, or for what purpose the almost countless orbs were created. In my judgment he proves himself a million of times wrong, and reaches the climax of unreasonable conjecture. I believe no astronomer will agree with him. None has yet appeared, though several of the most eminent have already expressed their dissent and surprise at his position. His reasons, to my mind, do not justify his conclusions, but prove the very opposite hypothesis.

He estimates there are one hundred millions of stars and worlds, and says they "are all composed of the same elements as the planets and solar system. Wherever organized life may have developed, it must be built up out of the same fundamental

elements as here on earth." Now, I fully agree with him in that statement, which I contend shows clearly that these worlds are inhabited. For if they possess the same elements and are controlled by the same laws, they must produce the same results of organic life as appear on our earth; and his arguments about temperature, proportion of land and water, etc., do not affect the question. His conclusions brand the Great Architect of the universe as an incompetent and wasteful profligate, and is contrary to all analogy in human reason, to all law of proportion and compensation, and to "the eternal fitness of things."

The fact that our earth has the same laws, forces, and substances as other worlds and is swarming with its countless myriad forms of organic life; and that all the manifestations of nature's creative forces are prolific in the production of sentient beings, is conclusive evidence that abundant life exists on other spheres, and other worlds are not dreary wastes of burning plains and sandy deserts. The fact that the Creative Spirit built up man's body through ages of animal growth and perfecting bodily development, or modeled it after such perfected animal forms, and then breathed His own life and spirit into it, and made man a spiritual, eternal being like Deity Himself, is strong evidence that in other suns and worlds he has done likewise; and that they are the theatres of spiritual as well as of vegetable and animal life. God creates because He is Love and must have spiritual children as the objects of His affection.

This reason would cause him to people other worlds with the highest order of intelligent creatures

similar to man. And the great planets, and great suns, like Sirius, Alpha Lyra, Vega and Alcyone, which are a thousand times larger than our sun, should possess beings of greater intellectual and spiritual faculties than our earth in proportion to their superior grandeur and power.

Thus the infinite wisdom and power of Creative Deity, and the laws and creations He has evolved on this earth, teach us that in other worlds and suns He has created other and numerous types of intelligent beings; and that living organic creatures of His bounty in all suns and spheres honor and adore His infinite goodness, power and love.

His suns and worlds are countless as the stars—
His jeweled finger-prints. Through chequered bars
Of light and shade all life is shadow of His breath—
An uttered thought. And law and change and death
His angel messengers. His spirit truth
Preserves the universe in fadeless youth.

The palpable Infinite! who can know?
Mind from a mustard seed to world, must grow.
The past, the emblems of His power hath wrought
Whose thought created first creating thought,
And veiled in mists above Olympian throne
We know the unknown God is God alone.

CHAPTER XVII

THE ELECTRICAL THEORY OF CREATION WILL SAVE MODERN SCIENCE FROM PANTHEISM

It is marvelous the number of scientists who question the fact as to whether there is a personal God, and who look upon the universe and its laws and operations as the manifestation of a universal intelligence that has no existence except as it is infused as an invisible force through all nature. In other words, pantheism, or belief in a world-God, has been taking the place of the materialism of the past century. And a vast array of distinguished agnostics, so-called, from Darwin, Spinoza, Huxley and Haeckel to Ingersoll, were really believers in pantheism.

Haeckel says he adheres to the Monism of Spinoza which, he says, is "matter, or infinitely extended substance; and spirit or energy, which is sensitive and thinking substance. These are the two fundamental attributes or principal properties of the all-embracing, divine essence of the world—the universal substance." What is this but pantheism of the rankest old, obsolete, pagan kind? What is "the all-embracing divine essence of the world—the universal substance," but a substitute for God,—a God which is simply the substance of the world—a world-God. According to this, all the elements of the universe are parts of Deity. The crystalline rocks and metals

of the earth, the dust we kick from our feet, the manure of the stable, and the odor of decaying vegetation are all a part of the body of God. And this, they claim, is the God of the universe, and the only God there is.

This is a fair analysis of pantheism, of Haeckelism, Darwin and Huxleyism, Ingersoll and agnosticism. What a shame on human reason! Yet these great thinkers, seeing the intelligibility of nature, its uniformity of laws and operations, without a knowledge of electricity were forced to this conclusion.

A recent pamphlet by F. E. Titus, a barrister of Toronto, entitled "The Pantheism of Modern Science," says: "A summary of recent investigations into life, force and substance and the opinions based by scientists thereon leads up to the conclusion that there is in nature a universal mind controling and permeating nature's manifestations."

In this I agree, but it is the universal mind of Deity as manifested through the marvelous creative forces of electricity. But this writer sums up his facts and theories, and concludes that the pantheism of the universe is the only explanation of all the countless and complicated forces and organisms of life which are to be found everywhere. And he contends the modern tendency of science is back to the old discarded pagan belief of pantheism. Even Flammarion seems imbued with that idea, and Haeckel championed it in his monistic theories. But as a knowledge of electricity has killed materialism, so will it defeat and destroy pantheism. This lawyer-scientist thinks nothing can prevent science from falling into the arms of pantheism, and he champions it vigorously.

But for the discovery of electricity this would have been an age of scientific materialism and pantheism. But the marvelous powers of this invisible force appals the stolid thinkers on "solid matter." They have found there is no solid matter, and that all matter in its primary form, and all force is as invisible as spirit, and that the universe swings on invisible forces as intangible as mind and as potent and inscrutable as destiny.

The conflict in the future between religion and Atheism will be chiefly a belief in a God that cares, or a God that does not care; and in science between an electric universe controlled by spirit and a pantheistic universe that thinks and feels in all its parts, and is itself the God of all. This last is virtually the position of Darwin, Huxley and all the agnostics from them to Ingersoll, and embraces Haeckel's moneism in its definition.

Let us see from whence they get their facts on which they base their theories. They say: "The evolution going on in the inorganic world is an evolution of intelligent life." I say that what they call intelligence is the result of electric laws and affinity; that the selection of atoms and their repulsion and the building of matter into substance and form is the intelligent operation of these electric laws, which originated in the infinite intelligence and power of the Creator. They say: "The soil maintains life because it is living matter itself." And I agree with them, and say all matter is living matter because it is permeated with electric life and energy and governed by electric law.

They say: "Metals in fact are sensitive things, like living organisms." I say they are "sensitive"

because they are easily electrified, and respond quickly to magnetic energy. They say, with Dr. Thomas Young, "There are all gradations of substance stretching all the way from the solid material to the spiritual, and gradations of consciousness from the inert mineral to the highest manifesting God." And I agree with them in a sense, for the consciousness in matter is electric energy, and in God and man it is spirit.

That these electric laws are intelligent, constant and wonderful we have abundant proof every day of our existence. Prof. Japp of the British Association says: "No fortuitous concourse of atoms, even with all eternity for them to clash and combine in, could compass the feat of the formation of the first optically organic compound." This is true, for only the infinite wisdom of creative law and electric energy could do it. It is not fortuitous or accidental; it is in accord with nature's perfect laws of electric combinations.

I am willing to admit that "inherent selective and directive force" is exhibited in organic and inorganic matter. And I explain it by the laws of electromagnetism. Agnostic pantheism has no explanation. They say that nature shows some sense and intelligence; therefore nature, the world, this great globe, is God.

They quote from their great authority, Huxley, who said that "Life was present potentially in matter when in the nebulous form and was unfolded from it by the way of natural development." I am willing to admit it, and to go one step further, and say it was there before the nebulæ was formed in the electric currents of life and power, which are the first

manifestations of creative force. The potentiality of all physical life was there in those electric currents, but not the spirit or soul-life of man. That came long after, when the animal organism had been evolved and perfected.

Yes, truly, in a natural sense, as Kingsley says: "Water hates the oil with which it refuses to mix; and lime loves the acid which it receives into itself, and like a lover grows warm with the rapture of its affection." This refusal of water and oil to mix is caused by electric repulsion, and lime and acid is a simple form of electric attraction. Then the pantheists dwell on what they call the "soul-life of plants," the intelligence of birds and beasts, and the regularity of seasons, years, and earth and sun revolutions, and all natural phenomena, which they say proves the world is God. All of which I have endeavored to explain by electrical law and processes; and they conclude all these things prove the pantheism of the universe.

Let us notice some of the wonderful workings and transmutations in nature on which the advocates of pantheism rely. Mr. Titus, as one of its champions, says: "There is a common bond of unity between the different kingdoms of nature—the mineral, vegetable and animal. That there is some primal atomic or common condition, some homogeneous substance in nature, some elemental essence from the aggregations and combinations of which all forms are built up." This is undoubtedly true, and proves that in the atoms and electric laws of nature there are ample means for the creation of infinite substances and countless organic beings. This does not prove pantheism. It only proves progressive, wise

electric, natural laws and forces. This "elemental essence from which all forms are built" I have shown elsewhere to be the ocean of electro-magnetism permeating all space and all life forms.

He says: "The processes of digestion and assimilation in man furnish evidence" of these things. That "the vegetable kingdom has power to assimilate earth and mineral and change it into vegetable, and in turn is digested and assimilated by the animal, and converted into an entirely different kingdom of nature." This is true, and I have shown how this is purely an electric process.

The dream of the alchemist, of the transmutation of metals, is mere child's-play compared with the processes of nature occurring every day in the human body. These are all electric transmutations by means of respiration, by digestion and assimilation of food, whereby a great variety of substance is converted into blood and bone, tissue and muscle, and all the functions of life preserved. It is also a correct statement that "all forms of matter have as their basis one common element, denominated primordial matter, protoplasm and homogeneous substance, all intended to designate the first form of matter."

This is true, and we found the first form of matter to be the electric currents of space, and the second form of matter to be the atom or molecule, and afterwards came the primordial cell or protoplasm. We also found that there was and is a common reservoir of life which stands back of its myriad manifestations upon the physical plane; a great ocean of vitality, which each organized being absorbs and gives out as we inhale and exhale the air

we breathe. And that reservoir of life is the vast ocean of electro-magnetism in which all things float and exist as in a sea of magnetic life-giving power.

The old hypothetical atom and stolid or solid matter was dead, according to the scientists of a few decades ago. But the electrician, dealing with a higher grade of matter, found that the old idea of matter as dead and inert was untrue, and would not accord with the facts. So that a new definition of an atom had to be formulated, defining it as an electric center of force and motion. And some physicists deem life to be co-eternal with matter. Which is not an unreasonable hypothesis as applied to physical life and substance.

Prof. Tyndall in 1872 said: "Life was present potentially in matter when in the nebulous form, and was unfolded from it by the way of natural development." In this I agree with Prof. Tyndall as to all life, except the spiritual or psychic life of man. And I have elsewhere tried to show how physical life came from the electric currents which formed the nebula, and which was afterwards woven into the earth by electric and atomic assimilation.

Ah! now we come to the gist of all this scientific trouble—pessimistic, agnostic and pantheistic. It is this: "Modern science is firmly rooted in the conviction that inherent powers and qualities gradually unfolded under the operation of natural laws, rather than in a supernatural, extra-cosmic volition introducing arbitrarily new forces." And modern science is partly right. She is right in her facts and her conclusions on this vital and basic point as to all physical creations and natural forces and powers. But I insist that the creation of the soul or psychic

life and powers of man are an exception, and do not come within the domain of physical creations. They are on a higher plane and as much above the realm of material forms and substances as our sun is above the earth. They belong to the spiritual world, to the realms of Deity, to the kingdom of God and the hosts of heaven.

They are a part of the great natural forces of the universe. Theologians call them supernatural forces, but they are the natural creative and controlling forces that have sovereignty over all the vast and complicated forms of the visible, material universe.

Therefore on the physical facts of organic creation I agree generally with the scientists. And if they had been informed in some of the vital and intelligent processes of electrical creation, they would never have believed in pantheism, or been pessimistic sceptics or hopeless agnostics. And in my judgment the only thing that will redeem modern science from pantheism is the prevalent belief in and acceptance of the theory of electrical creation.

This will explain the harmony, intelligence, continuity and perfection of the physical universe, and relieve their minds of all grounds for scepticism.

There is "an intelligence or selective power" in matter. There is a great "Chemist-Physicist" superintending nature's operations, sorting out two parts of hydrogen and one of oxygen to compose the raindrop and the waters of the ocean. It is no "fortuitous concourse of atoms," which accomplishes these results and preserves the life of the world. It is the omniscient wisdom embraced in the laws and forces of electric energy, which is the right hand of Deity and the word of Creative power.

To show the possibility and ease with which many of the Bible miracles could have been performed by natural processes at the volition of Divine power, Dr. Albert G. Geyser of New York City, on May 14, 1903, according to the New York World, elucidated many of the miracles by the use of electricty and the X-ray. This he did before the members of the priesthood of the Holy Name Society of St. Anselm's Church, to whom he said he felt he would be able to demonstrate that the miracles were in no way inconsistent with science. After setting up his apparatus, he said:

"For centuries those who thought deeply on the matter have been puzzled with grave doubts as to the possibility of God being all-seeing and all-hearing. What did the telephone reveal thirty years ago? Did it not reveal forces in nature that would allow men to hear voices at great distances? And now, thanks to the great Roentgen invention of only nine years ago, we are able to see through a four-foot wall simply by means of this puny apparatus."

Then he set the great glass wheels of his battery in action and allowed his audience to look through pieces of thick timber, and other solid bodies. He showed how simple it was to produce a halo of electric fire about his head though he remained a distance of ten feet from the apparatus. As he raised the two negative and positive poles to his head the electricity passed through and out of the crown of his head in a circle of flame. Then he compelled his machine to shoot jagged flashes of lightning. Then, referring to the Bible account of the descent of the Holy Ghost in a pillar of fire, he

called for volunteers, and Thomas MacKaye came forward onto the platform. He then placed two steel rods on each side of him, and started his apparatus, when tiny sparks began to jet off of Mr. MacKaye's clothing. Soon the sparks grew to curling flames, and the man's entire body became as a mass of writhing blue and white flame. Yet afterwards when he stepped from the platform not a thread of his clothing was singed. Rev. Father Ruppert, at the close, said: "Nothing I have ever seen has brought me to so fully understand God's miracles."

These pantheistic devotees are even trying to make waves of ether, air and water intelligible things, and seem to think they are in the nature of a circulating medium for this world-God, like blood is the circulating medium of man's body. Even so orthodox a scientist as Prof. Serviss, in the New York American of May 16th, 1903, goes into panegyrics over waves and wave motion as follows: "The undulatory theory of energy is carrying everything before it. It is not saying too much to aver that wave motion is concerned in nearly all the phenomena of physical life . . . Think for a moment of what is included in the science of waves. In the air all sounds, all musical harmonies are waves; in the solid globe, all earthquakes are waves; in the ether light, electricity and heat are waves. It is waves that make the stars visible, and yet more mysterious oscillations picture for us on photographic plates marvelous nebulous objects. Lord Kelvin has been credited with the statement that the fluttering of a butterfly's wing sets up vibrations that shake the universe."

This is superficial science, for it explains nothing. Waves are simply a form of motion, and a form of motion creates nothing. Vibrations of what? Wave motions of what? Our learned friend does not inform us. Vibrations and wave motions are like heat sensations, they are not realities; the force that creates them is the reality, and they are but the mode or law of operation. The reality—the force creating these vibrations and wave motions—is electricity. Yet he does not mention this fact or any cause, but gives all the credit to the motion or manner of motion, and ignores the cause, which is the most important of all. Mr. Titus seems to think motion has consciousness, for he states that, "the consciousness which is wrapped up in motion" becomes more or less active in matter, and that God sleeps in the atom, and man is a potential deity.

These wonderful manifestations of electricity are used by these pantheists to bolster up their theory of these being manifestations of intelligence in nature. And so they are, but they should remember that nature is the art of God, not God himself and God's art is wise and perfect. We have a new definition of life given us which shows wonderful intelligence in the various parts of man's body. It is by Prof. Justus Gaule of Zurich. In the American Journal of Psycology, January, 1903. He says: "The whole organism resembles a chemical laboraory with as many apartments as there are organs or glands." As all chemical changes are electric changes, a chemical laboratory is the same as an electric laboratory. He continues: "The substances produced in each apart-

ment are those needed in others either for their construction or for their work." According to him life consists partly in a continual process of interchange and reconstruction, at times sufficiently violent to tear muscles, mutilate nerves and cause stoppage of blood—a process that goes on "in the interior of the organism without external excitement." Herbert Spencer defines life as "the continuous adjustment of internal relations to external relations," but Gaule's definition of life lays stress on the vital interplay between the parts of the organism, which makes it a machine transforming external energy. He asserts that the living organism is more than a machine, because it does not create energy directly from combustible materials, but only after building up its own tissues.

He says a machine does work, but it does not create and repair itself like living organisms. He would therefore modify the prevailing definition of organic life, and make it not only a machine, but more than a machine, and emphasize the fact that life is as much an interaction between various parts of the organism as between the organism and the world of exterior matter. He says one organ of the body may lose in bulk, in order that others may increase. This he has studied experimentally in the frog, and finds that at one time the organs of sex grow at the expense of the muscles and liver, and at another time the reverse is true, and he insists that "life is a continuous process of reconstruction within the vital organism." This is an important addition to the definition of life and tends to support the electric theory, for every function of the body is adapted to generate the electric

energy needed for itself and other parts of its organism.

It is true that solid metals, wood and stones are in a constant state of molecular motion. According to Sir Norman Lockyer, "the stones of which St. Paul's Cathedral is built consist of millions of millions of small particles called molecules, and although the structure seems absolutely at rest, as if it would last forever; yet, when you get down into the intimate structure of each stone and every part of the fabric, you get nothing but a multitudinous ocean of motion." Now, Mr. Titus says, "there is some inner hidden power which marshals and controls the innumerable host of molecules in all matter and keeps them whirling with tireless energy." This is true, and I fully agree with him. But he thinks it is the world-God in the atoms; and I think it is electric energy—working under the intelligent laws of the world-God, the sun-God and the God of the universe.

All these pantheistic scientists have never considered the wonderful powers and utilities of electric currents and electric energy which permeates all matter, from atoms to worlds. When they do so, they will see in electricity an intelligent and powerful causality which will satisfy their minds and lead them away from pantheism and its follies.

They are great believers in evolution, and so am I, and what they require in evolution is, "the inherent power of the evolving entity to respond to external influences." This being the requisite, they have all they ask in the magnetic currents and electric energy pervading all nature. It is a fact that the human body contains millions of microscopic

organisms working under the dominion of one human life, and, in other words, man is in his body a vast colony of microbes or protozoans supposed to be endowed with consciousness and volition.

A battle in germland is described by Dr. Donald Ross in investigating the microbes of malaria. This was a fight between a malaria microbe, and three phagocytes which are said to protect the purity of the blood. He says: "While observing a malaria germ I saw a phagocyte make its way to the malaria germ with the intent of devouring it. Ordinarily this would be easy, but the germ, instead of allowing itself to be attacked, attacked the phagocyte in a battle royal that lasted over fifteen minutes. Finally the germ drew off, and hurried to where another phagocyte was wandering aimlessly.

"It hurled itself on the second phagocyte, pushing hard against it with its arms, while the phagocyte tried to rear up and get around and envelope the germ, but finally gave up and flattened itself against an air bubble, while the germ still kept on pummeling it. After fifteen minutes another phagocyte appeared coming rapidly across the field. The germ then left its fallen foe and attacked the newcomer. The third phagocyte got enough of it in about one minute and turned squarely around, fleeing across the whole field, the germ hanging on like a snake on a dog. After five minutes the germ let go and the phagocyte slunk away. The malaria germ had by this time reached the limits of its endurance in the rapidly weakening blood and finally attached itself to the glass of the slide and died."

Few people can believe that such scenes as these

may take place in the life-giving blood currents of their own bodies. Yet, if we believe those who have studied the millions of microscopic life forms which live in our bodies, such scenes may occur there. According to biologists, billions of microbes are generated in our bodies too infinitesimal to be observed by a microscope. And they say their fermentation in countless numbers produces a poison which creates irritation, the decrepitude of age and finally death. They say visible microbes show intelligence.

Engleman seems to hold that such facts as these and those connected with molecular organisms, "point to the presence of some psychic powers in the protoplasm." But I do not think so. They only show the wonderful and diversified powers of electric energy under divine law to evolve myriads of microscopic life that acts under intelligent electric impulses, which in its matured form we call animal instinct.

Thus we have traced conscious life from the dust out of which man's body was formed up through all the intervening kingdoms of nature until we reach man himself, who is the only creature that possesses a spiritual nature, a psychic soul, and an immortal destiny.

From the grossest materialism man and human science is rising at last to the truth and conception of a spiritual world of so exalted an order, and so sublime a reality, that it has been said, "to connect the mind of man with the Spirit of God."

All nature affirms that there is a Supreme intelligence working through electric law within the manifest universe, which is its living electric organism.

That all physical law and life are bound together in an all-embracing whole, whose myriad aspects serve to mark the path of evolution, and to spur each individual member on to progress and perfection. That through the whole realm of nature the one electric life pulsates and stirs the smallest atom and the mightiest star. But above all is the eternal power of Deity and the deathless spirit of man, blended in a stronger unity than that of nature, linked in a joyous and an eternal destiny, sovereigns of worlds, rulers of suns and masters of the universe.

Because of the perfect unity and harmony of the universe, the wisdom and regularity of all its movements and functions, and the apparent intelligence of its lower living organisms, the agnostics embrace monism and pantheism. But these are not good reasons. They are better explained by the electrical theory of creation than by any other hypothesis ever offered in human history. They show how and why this vast universe is a perfect, harmonious organism, in accordance with natural law. This has never been attempted before.

Nikola Tesla asserts most truly that "of all the views of nature, the one which assumes one matter and one force, and a perfect uniformity throughout, is the most scientific and the most liable to be true." Electrical creation seems to fully comply with these requirements. And Prof. Crookes affirms that, "the seventy elements of our text books are not the pillars of Hercules which we must never hope to pass." While Langley says there is only one force, and light and heat are merely sensations. And Sir Wm. Grove refers the causation of all forms

of force to one omnipresent influence. And all agree there is only one matter, so they all seem to be approaching a universal belief in electrical creation. And every argument made for pantheism and monism is an argument made for a stronger and better theory—the electric theory of creation. And the champion of pantheism as well as the electric theory affirms: "Since we are all bound together in one common enterprise in which progress is hastened through the harmony of its parts, altruism becomes profound wisdom, selfishness a mark of ignorance, and the highest codes of ethics are the most scientific expression of nature's laws."

The superior power of this age consists in its superior ability to deal ingeniously and wisely with the tremendous forces concealed in matter, and held subject to nature's law.

A knowledge and application of these forces and laws have been the means of marvelous progress, untold blessings to humanity, and have lifted life from its narrow bounds to a joyous, ecstatic sense of the glory, beauty and divineness of this world. As the ancients saw this universe it was but a small flat island in a large ocean. The vast expanse above it of space and stars was a crystal vaulted roof, to keep the waters above from the waters below. When it rained they said "the windows of heaven were opened." This little, flat earth then rested on the shoulders of Atlas, or the back of four elephants, who stood on a huge tortoise. What a vastly different universe the people of modern times behold! This little, flat earth has expanded into a great globe, spinning through space fifty times faster than a bullet from a rifle; and the blue vault of

heaven that to them was the end of the universe and a crystal wall to keep back the waters, has opened out, lifted up, and broadened to an infinity of space containing countless suns and worlds. Where their narrow view saw only wonders, miracles, and innumerable myth-gods of superstition, we see the orderly processes of nature proceeding under uniform laws, propelled by one fundamental force—invisible electricity, and formed from one matter or substance—the invisible atom. And this vast and complex universe is the unveiling of the eternal thought of one Almighty Deity, and the manifestations of His creative wisdom and power. Thus our earth becomes a divine revelation and man a spiritual wonder. Then there is a vast and mystic meaning in sea and land, in valley and mountain, in man and all living creatures; and the day uttereth speech and the night showeth knowledge. And all tell us God is in His heaven and in His earth, and in man and in all His wonderful works, and is ever present in spirit and electric power.

That He clothes the valleys with the verdure of prairie and forest, the hills and mountains with beauty and grandeur, and peoples the land and the sea with living creatures. He gives fragrance to the flowers, songs to the birds, gladness to the sunshine and life and joy to all living.

In His infinite goodness He gives man vastly larger life and loftier powers than all other earthly beings, so that they may not only wonder and adore; but become co-workers with the Infinite, and understand and execute His eternal purpose, and Omnipotent Will.

At last all thoughtful men are being brought face

to face with that creative electric energy controlled by Omniscient Spirit, which is felt in the magnetic sunshine, seen in the falling rain, the dew-drops, the white-robed lily, the blushing rose, and the joy and gladness of life itself. But above all things else there is bestowed on humanity the spiritual power and loving benediction of the Great Spiritual Father, who spread out the heavens as a curtain, lifted up the mountains and started suns and worlds on the eternal pathway of their inscrutable destiny. We of this generation were born into a little narrow world only six thousand years old, soon to be destroyed by fervent heat; a world cursed by its maker, where the vast majority of its inhabitants were doomed to eternal punishment. Where human slavery was practiced and approved, where the divine right of kings, the degradation of the masses, wars, dueling, ox teams and slow coaches predominated.

We now live in a world of electrical wonders, marvelous luxuries and personal freedom, that has millions of years behind it and eternity before it. Time enough to solve all problems, dispel all ignorance and discover all truth.

Recent experiments by Prof. Goodspeed of the Pennsylvania University prove that man is a magnet and electric organism which gives out an aurora or light from his body so that cats, mice and other animals may see him in the dark. He has also taken photographs from the electric light or rays from the human hand. This was also done by French scientists six years ago and is mentioned in "Invisible Light."

On May 26th, 1903, Prof. Percy Lowell, of Flag-

staff Observatory, Arizona, announced that a brilliant projection has been discovered on the planet Mars, and was seen for thirty-five minutes. Some think it is Mars signalling to us; others that it is a snow-capped mountain, or a luminous cloud; but all agree that it shows Mars to be inhabited.

Prof. J. A. Fleming of the London University, seems to agree with my conception of electricity. He also considers it as a refined matter and the electron as the atom of electricity, In the "Popular Science Monthly" of June, 1903. He asserts that: "The electron isolated presents itself as electricity of the negative kind; and in combination with co-electrons and other electrons it forms the atoms of ponderable matter. At rest the electrons or co-electrons constitute an electric charge, and when in motion it is an electric current.

"A steady flux or drift of electrons in one direction, and co-electrons in an opposite direction, is a continuous electric current, while their mere oscillation about a mean position is an alternating current. The vibration of an electron, if sufficiently rapid, enables it to establish electric waves in the ether; this is the cause or foundation of wireless telegraphy. The electrons or atoms of electricity can, in some cases, make their way, freely, between the atoms of ponderable matter. Where this can take place easily, we call the material a good conductor. Electrons in their free condition constitute electricity, and the electrons are atoms of electicity."

These electrons and their currents of electricity, I contend, are the creative cosmic force of the universe, evolving all visible form and substance, and

producing all light, heat, vital force and so called gravitation.

Radium is one form of electricity or electrons in marvelous combination and are said to have the power, first, of giving out light perpetually without any exciting cause; second, to emit rays that penetrate solids like X-rays; third, the property of acting on sensitized plates; fourth, of causing air to conduct electricity; and fifth, the emission of heat.

Sir Oliver Lodge, in a May, 1893, London periodical, shows the advance of science in recognizing the forces of nature and the dominion of mind and spirit over the material world. He affirms that: "the whole effort of civilization would be futile if we could not guide the powers of nature. The powers are there, else we should be helpless; but life and mind are outside of these powers and can direct them along an organized course. And this same life or mind, as we know it, is accessible to petition, to affection, to pity, to a multitude of non-physical influences; and hence, indirectly the little plot of physical universe which is now our temporary home has become amenable to truly spiritual control." This sustains my contention that the spirit life of man is outside of matter and material powers and can control and direct them.

This is truth, well spoken, and illustrates the electric theory, for the powers of nature is the electric energy in nature, and this is guided, and under the control of mind and spirit—the mind or spirit of man and the omnipotent spirit of Deity. And the future will reveal the wonderful controlling power of mind over matter through electric energy.

As the sun may send to each planet a different

vibration or current of wireless electricity, and each planet will receive only such current as it attracts and to which it is attuned; so the message of Deity to the souls of men will only reach and affect those souls which are attuned to receive them. This in the vast realms of nature is the law of electric or mutual attraction, and in the invisible realms of spirit the same universal law applies. This great principle of mutual attraction, receptivity and mutual adjustment governs everywhere in the universal realms of nature and truth.

Rev. David J. Burrell, in his sermon on "Wireless Messages of God," sets forth some strong scientific reasons why the natural man cannot discern spiritual things. Under this universal law of mutual adjustment he says: "If you strike a tuning fork keyed to middle C it will awaken a response in another fork, provided the latter is keyed to the same pitch, but not otherwise." And he applies it to men who respond to spiritual influences and those who are spiritual non-conductors.

This is the basic fact in wireless telegraphy. At Cape Cod there is a transmitting station consisting of four steel towers with a bunch of wires suspended from the top and meeting at a common point like an inverted cone. If the power be applied to the apex of this cone the wires begin to tremble; and the current, oscillating at a rate say of nine hundred thousand vibrations per second, creates a series of corresponding vibrations in the ether, just as a stone cast into a lake sends out concentric circles. This ether wave or message speeds outward with incalculable rapidity in search of its receiver; and it will cross the ocean to find it.

Now, there is such a receiver at Poldhu, in Cornwall, where the wires are precisely attuned to the transmitter at Cape Cod; that is, their vibrations are the same, say nine hundred thousand per second; so that the message sent from Cape Cod meets no response until it finds its sympathetic station at Poldhu, and this attracts and welcomes it.

Marconi's system of wireless telegraphy is not an invention, but a discovery of a natural law or process which has been going on continuously through all the realms of space since time began.

The sun as the great source and center of energy in our solar system is constantly sending out messages of light and life to his family of planets. It is a scientific fact clearly proven that a ray of light is an electric wireless message from the sun to the earth, and it could not be received unless the earth attracted it, and was attuned to it. For here the same law prevails between sun and earth that no message can be received except by some object which is sympathetically attuned to it.

Prof. Pupin suggests that a beam of light representing a certain number of vibrations per second, intended to convey the color red, is sent forth from the sun. It speeds through space until it reaches the earth; where intent upon its eager quest it passes unresting through all the meadows, since no grass-blade is adjusted to receive it; no daisy or buttercup, no lily or heliotrope being disposed to welcome it; it passes over all gardens until it finds a rose; and here it pauses and finds welcome. Why? Because the rose has a natural affinity for it, and like two lovers in mutual affection they meet and embrace each other, and are blended in the harmonious union of

nature's electric law of life, growth and beauty. The same law of mutual attraction and wireless telegraphy creates the lofty elm, the towering oak, the blade of grass and the waving fields of golden grain in the Autumnal harvest.

Dr. Burrell makes an apt and beautiful illustration of these truths of nature in their analogy to spiritual laws. He says: "This process which has been discovered to be so prevalent in nature has infinite field and scope of operation in the province of spiritual things. God as the great transmitter of truth bears to the spiritual world a relation corresponding to that of the sun in the natural world. Assuming that there is a God, and that we are created in his image and after his likeness, it follows as an inevitable conclusion that He will somehow reveal himself to his children and hold converse with them. But here is the application of the principal referred to: *The man who would hear the wireless messages of God must Himself be attuned or adjusted to the character of God.*"

This is superlative truth that all wise men should consider and not have occasion to lament, like Charles Darwin, at the close of his long life of physical investigation, that he had starved his spiritual nature. For our thoughts depend on our receptive natures and our lives are just what we make them, and our future is according to our character and the inscrutable laws of life and destiny.

O! the wisdom of the wisest; O! the goodness of the good!
Gleaning through the sweep of ages where Divinity hath stood,
Shining footprints of celestials, through the mystic gleaming bars,
Of the ever past and present speaking in the earth and stars.
How they teach the lofty spirit of the beautiful Beyond,
Of God's uttered truth and goodness, if but yearning souls respond.

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